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1979 Survey of the Check Collection System

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Bank Administration Institute

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1979 Survey of the Check Collection System

The Check Collection System Performance Study

Banking's check collection system carries the bulk of interbank data. This system, while using relatively specialized check handling equipment, is still labor intensive. Although the interbank check exchange is often called the check collection system, it is, in reality, a loosely organized coordinated system. The procedures for control, crediting, security, and sorting are partially controlled by the Federal Reserve System and the Uniform Commercial Code, and partially based on agreements between banks through correspondent banking relationships.

Check collection and check processing are the result of a rather loose coupling of operations in many separate banks. Consequently, there may be a significant difference in the cost, speed, productive capacity, and quality of the various bank processing systems.

Each bank is responsible for its own check processing operation. No one banker or Federal Reserve processing officer can be held responsible for total system performance. Nevertheless, each bank may suffer if the entire check exchange system falters.

Because system performance varies over time due to changes in check volume, labor, processing equipment and systems, and transportation couriers, up-to-date information is required to enable each bank in the system to compare its experiences with other banks.

To maintain the effectiveness of the check collection system, it is essential that defects be remedied before they become serious. Accordingly, the collection and the assessment of the data concerning the "frequency of error" aspect of the system within this report provide the banking industry with effective indicators with which to gauge adverse trends in the performance of the check collection system.

Background

In 1970, Arthur D. Little, Inc. (ADL), under the auspices of the Operations and Technology Task Force of the Monetary and Payments System (MAPS) of the American Bankers Association, collected and published data relative to the per-

formance of banking's check collection system.* The data were used as a basis for evaluating the adequacy of the check collection system from 1970 to 1980. It was realized that the greatest value of the data would be derived from a comparison with similar data in future years. Therefore, ADL recommended a periodic collection of check volume data.

Bank Administration Institute undertook these annual performance measurement surveys. Since 1971, an annual survey has been conducted to collect data that would provide bankers with a measure of industry system fails and a general set of measures for their own check processing operation. The results of each survey also were published by BAI.

This report, the ninth in BAI's continuing program of monitoring the performance of banking's check collection system, analyzes the system's performance for 1976 through 1979. Survey data for 1971 through 1975 may be found in previous reports.

Survey Distribution

In October, 1979, 225 commercial banks ($250 million or more in resources) received a BAI *Check Collection Performance Measurement Survey* questionnaire. All 52 banks that had participated in the original ADL/MAPS study were included. Several banks that had been unable to participate in previous years were dropped from the survey distribution in 1979. The survey questionnaire was sent instead to banks of similar size in the same geographic region that had not previously participated. The banks were asked to collect data for the week of November 19-23, 1979. A second survey was not needed for 1979 because of a sufficient number of responses to the initial survey request.

Survey Respondents

The total number of survey respondents is shown in Table 1. Of the total number of banks surveyed, 68% responded. The response rate was 58% among the banks that had participated in the ADL survey. The 1979 data represent 368 million checks processed, including 206 million transit checks and 162 million on-us checks, 765 bank processing days, and 129,000 man-days of check processing activity. These data were analyzed to determine overall check collection performance related to past measurements and manpower utilization by check processing tasks.

Appendix A consists of the 1979 survey form. Appendix B presents data on check flow patterns between banks. Appendix C summarizes many of the comments on check collection and processing operations that were submitted by bankers who participated in the 1979 BAI survey.

**The Outlook for the Nation's Check Payment System: 1970-1980*, Arthur D. Little, Inc., Cambridge, Massachusetts, December, 1970.

Table 1

Survey Respondents by Geographic Area

Area*	ADL Survey Banks 1976	1977	1978	1979	All Reporting Banks† 1976	1977	1978	1979
Boston	3	3	3	1	13	14	10	9
New York	4	5	5	5	16	18	20	17
Philadelphia	1	3	3	1	14	21	18	22
Pittsburgh	3	4	3	2	6	6	6	5
Washington, D.C.	0	0	2	1	7	8	10	7
Atlanta	2	2	2	2	15	18	14	19
Chicago	4	4	6	3	9	14	12	8
Cleveland	3	2	3	3	11	10	12	11
Detroit	2	2	3	1	6	9	6	8
Minneapolis/St. Paul	3	3	0	0	3	3	0	0
St. Louis	3	3	1	2	10	10	9	9
Dallas	3	3	3	2	9	8	6	4
Houston	0	2	2	2	2	5	8	9
Los Angeles	1	2	2	1	7	9	9	9
San Francisco	3	3	2	2	9	9	8	11
Denver	2	3	3	2	4	6	6	5
Total banks	37	44	43	30	141	168	154	153

**The Outlook for the Nation's Check Payment System: 1970-1980*, Arthur D. Little, Inc., Cambridge, Massachusetts, December, 1970.

†The non-ADL banks are not necessarily located in the cities surveyed by ADL. For the sake of consistency, however, their data are included in a regional area that has as its center the city studied in this survey. All reporting banks include the data from the ADL banks.

1979 Survey Highlights

The highlights of the 1979 survey reveal the following changes from the previous year:

- The average reject rate remained steady at 2.1%.
- The average rate of transit return items discovered increased dramatically from 1,023.1 items per 100,000 transit items sent in 1978 to 1,207.1 items in 1979. The 18.0% increase in the incidence of return follows an 8.5% increase in 1978, reflecting a growing concern of the banking industry.
- The average rate of free and lost items discovered remained stable at 21.7 items per 100,000 incoming items, halting a downward trend.
- The average rate of missent, miscoded, and listing error items discovered increased again in 1979 by 12.2% to 23.0 items per 100,000 transit items sent.
- The average transit holdover rate continued to improve, while the average dollar value of each item held over increased slightly to $661.

- The resolution time for outstanding exception items improved slightly in 1979. The previous survey results had indicated a worsening trend in the age distribution of outstanding exception items. However, the 1979 survey revealed that 70.0% of the exception item dollars outstanding were less than 30 days old, as compared to 67.8% in 1978 and 73.4% in 1977. The trend revealed by the survey had sparked a concern among bankers, culminating in a standardized adjustment form for the banking industry.
- Both average and median labor productivity posted slight gains over 1978, when the median had declined for the first time. Productivity gains were small, with a 1.4% increase in the average to 530.0 items per man-hour and a 3.4% increase in the median to 490.3 items per man-hour. The median rate did not recover to the level attained in 1977.

As first indicated by the 1978 survey, the nation's check collection system has not improved as in the past. Many of the major technological innovations have been implemented in the banks surveyed, which apparently caused the gains reported in previous years. However, further gains will only be won through increased awareness and control throughout the industry. Bankers are more aware than ever of the problems inherent in returns, adjustments, and productivity. These, and other, problem areas where "fine-tuning" needs to be continued, will determine future efforts to improve the performance of the check collection system.

The Measures of System Performance

The primary purpose of the BAI survey is to monitor the industry's check collection system performance. The system's performance can be measured in several ways: cost, speed, or the frequency of error. Although there may be many different ideas concerning what constitutes a system failure or an error, the survey and its succeeding analysis considered the following items to be representative of defects in the system's operation:

- Reject rates.
- Transit returns.
- Free or lost items.
- Missent, miscoded, and listing errors.
- Transit holdover.
- Problems reported by bankers.

Because banks use various definitions and data collection methods, the data presented on system failures have validity only when compared with data collected in the same manner.

Only minor modifications were made in the 1979 survey questionnaire. These changes did not appear to affect the collected data and were comparable to the previous survey data. If the responding banks collected the data in the same manner, the 1979 survey results will identify the changes that have occurred in the past year. All performance analyses for each subject are presented together.

The formulas used in the calculation for each table are given to assist bankers in making their own comparisons, Several respondents could not answer every question in the survey because of the internal systems in their banks. Consequently, only those banks that furnished valid answers to all questions pertaining to a given formula were considered in the calculations. This accounts for the varying number of respondents in the different tables.

Reader/Sorter Reject Rates

Definition: Percentage of items rejected for any reason by an MICR reader/sorter.

As shown in Table 2, the calculated average reject rate remained at 2.1%, approximately the same between 1978 and 1979.

An examination of the results for all banks revealed that seven areas experienced a reduction in the reject rate, ranging from 0.1% to 1.1%. After an increase in the reject rate between 1977 and 1978, the Denver region reported a significant decrease in the average percent of reader/sorter rejects of 1.1% in the 1979 survey period. An additional eight areas experienced an increase in the reject rate, ranging from 0.1% to 0.7%.

It is significant that six of the 152 reporting banks had a reject rate of less than 1.0%, ranging from a low of 0.2% to 0.98%, and only one bank experienced a reject rate of more than 6.0%. The median was again 2.0% (Table 3).

Of the 106 banks that were able to present a more refined breakdown of first-pass rejects by type (Table 4), on the average:

- 20% were due to errors in the transit number field.
- 18% were due to errors in the account number field.
- 40% were due to errors in the dollar amount field.
- 22% were due to other reasons, or were not readily classified in the previous categories.

The reporting banks indicated a slightly higher result than the report of the Joint Industry Task Force on Routing Numbers, which found that 50% of all rejects were due to errors in the transit field, amount field, or both.

The nine-digit routing number was designed by the Task Force to eliminate single digit can't reads and to minimize rejects in this field. The current survey has indicated only minimal improvement in the read rate in the transit number field. In further surveys the results will be tabulated to show the effectiveness of the nine-digit number.

In summary, only the banks that participated in the original ADL survey continue to show a decrease in the percentage of rejects on reader/sorter equipment. The new technology available in check processing had previously affected the incidence of reader/sorter rejects, but continues to have little effect on the 1979 survey. Whether this continues to remain true in the future will be of considerable concern to the banking industry because of the high cost of reject processing.

A comparison of consolidated figures by major geographic sections of the country is shown below:

	Consolidated Reject Rates			
Section	**1976**	**1977**	**1978**	**1979**
6 Eastern areas	2.6%	2.2%	2.2%	2.1%
7 Midwestern areas	2.5%	2.2%	2.2%	2.2%
3 Western areas	1.8%	1.8%	1.9%	2.0%

Table 2
Percent of Rejects on Reader/Sorter Equipment by Area

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	2.1%	2.1%	2.0%	2.3%	2.0%	1.9%	2.1%	2.4%
New York	3.6	2.8	2.4	2.4	3.4	2.6	2.3	2.4
Philadelphia	1.6	2.3	2.0	1.1	2.1	2.1	2.2	1.9
Pittsburgh	1.9	1.5	1.6	1.4	2.1	1.6	1.6	1.9
Washington, D.C.	*	*	1.6	1.0	2.4	1.8	2.2	1.9
Atlanta	1.6	2.8	2.8	1.9	2.6	2.4	2.3	2.1
Chicago	2.5	1.9	2.0	2.6	2.3	2.0	2.0	2.1
Cleveland	2.4	2.1	1.7	1.7	2.8	2.6	2.1	2.2
Detroit	2.6	2.6	2.0	1.6	2.6	2.6	2.0	2.5
Minneapolis/St. Paul	1.9	2.1	*	*	1.9	2.1	*	*
St. Louis	1.7	2.0	1.9	1.4	1.9	2.1	2.1	2.0
Dallas	2.2	1.8	2.8	3.0	3.0	2.0	2.8	2.4
Houston	*	1.6	2.4	2.2	4.3	2.3	2.5	2.2
Los Angeles	2.8	1.8	2.1	1.7	2.1	1.7	1.9	2.1
San Francisco	1.5	1.8	1.5	1.5	1.7	1.8	1.6	2.3
Denver	2.5	1.7	1.8	1.7	2.5	2.1	2.8	1.7
Total banks	37	44	41	30	140	166	150	152
Average	2.2%	2.1%	2.0%	1.9%	2.3%	2.1%	2.1%	2.1%

$$\frac{Q21}{Q7} \times 100$$

*No respondents.

Table 3
Distribution of the Reject Rate

Reject Rate	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0% — 1.0%	0	1	0	1	3	5	0	6
1.0% — 1.5%	6	6	8	9	15	24	23	26
1.5% — 2.0%	10	15	18	9	30	44	49	47
2.0% — 2.5%	7	11	5	4	30	34	28	33
2.5% — 3.0%	8	8	4	5	27	31	25	21
3.0% — 3.5%	4	2	4	1	13	12	14	7
3.5% — 4.0%	1	0	1	0	8	5	4	7
4.0% — 4.5%	1	1	1	1	7	7	4	2
4.5% — 5.0%	0	0	0	0	3	1	0	1
5.0% — 5.5%	0	0	0	0	2	1	1	0
5.5% — 6.0%	0	0	0	0	2	2	0	1
Over 6.0%	0	0	0	0	2	2	0	1
Total banks	37	44	41	30	140	166	150	152
Average	2.2	2.1	2.0	1.9	2.3	2.1	2.1	2.1
Median	2.3	2.0	1.9	1.8	2.4	2.1	2.0	2.0

$$\frac{Q21}{Q7} \times 100$$

Table 4

Percent of First-Pass Rejects by Type and by Area

Area	Transit Number		Account Number		Dollar Amount		Other Reasons	
	1978	1979	1978	1979	1978	1979	1978	1979
Boston	27%	27%	14%	19%	41%	44%	18%	10%
New York	19	19	18	19	46	40	17	21
Philadelphia	14	14	10	18	53	42	23	26
Pittsburgh	15	20	19	20	44	38	22	22
Washington, D.C.	23	29	14	19	46	40	17	13
Atlanta	21	20	23	21	42	35	14	24
Chicago	21	23	12	12	49	44	18	21
Cleveland	18	18	22	19	37	39	23	24
Detroit	19	18	22	22	26	35	33	25
Minneapolis/St. Paul	*	*	*	*	*	*	*	*
St. Louis	18	16	19	9	42	47	30	28
Dallas	49	25	1	25	43	25	7	25
Houston	19	19	14	16	48	59	19	7
Los Angeles	16	19	14	23	33	36	37	21
San Francisco	22	18	19	19	34	36	25	27
Denver	13	17	13	16	26	45	48	21
Total banks	86	106						
Average	19.5%	19.2%	16.1%	18.5%	40.7%	40.5%	23.7%	21.9%
Median	8.8%	18.1%	1.5%	19.3%	19.8%	40.2%	2.0%	20.6%

*No respondents.

$$\frac{Q17 + Q18 + Q19 + Q20}{Q21} \times 100$$

Transit Returns

Definition: Items returned today for any reason that were originally sent out as transit items from this bank.

The average rate of return items for 100,000 transit items sent showed a substantial increase for the 1979 survey. For all banks, both the average and median number of items returned per 100,000 transit items sent increased. This bears out the experience of many banks that have become concerned over the increasing incidence of transit returns.

In 1979, an average of 1,207.1 transit return items were discovered out of each 100,000 transit items sent, as compared to 1,023.1 items in 1978 (Table 5). This represents an 18.0% increase over 1978. In addition, the median rate of transit return items also increased approximately 22.9%.

In 1976, only 64% of the responding banks experienced an average return rate under 1,000 items per 100,000 transit items sent. In 1979, only 51% of the responding banks reported a rate under 1,000 items (Table 6). This disturbing trend

Table 5

Transit Returns by Area
(Rate per 100,000 Transit Items Sent)

Area	ADL Survey Banks 1976	1977	1978	1979	All Reporting Banks 1976	1977	1978	1979
Boston	699.4	534.2	601.6	832.6	720.3	529.3	593.4	911.3
New York	734.8	692.3	915.9	1,601.9	783.5	684.0	840.3	1,310.4
Philadelphia	946.4	744.0	797.9	942.9	773.7	672.3	772.4	813.6
Pittsburgh	719.8	724.6	904.9	845.5	687.1	707.9	824.6	598.9
Washington, D.C.	*	*	1,735.6	974.2	762.2	750.4	1,041.4	1,070.3
Atlanta	1,036.6	1,318.9	832.8	1,066.1	1,121.0	1,217.8	914.6	1,298.9
Chicago	727.7	669.0	815.2	1,032.7	728.2	704.1	805.1	1,005.0
Cleveland	905.0	1,195.9	1,350.7	1,352.1	978.9	916.0	1,023.8	1,039.5
Detroit	1,144.0	927.5	945.1	1,453.6	869.5	763.3	883.1	1,320.6
Minneapolis/St. Paul	820.2	689.0	*	*	820.2	689.0	*	*
St. Louis	1,078.4	1,087.9	1,263.4	1,276.0	1,103.6	1,072.9	1,362.2	1,428.5
Dallas	1,297.4	906.5	994.0	1,311.7	1,191.0	931.2	952.7	1,530.1
Houston	*	1,325.1	949.8	1,173.4	1,537.3	1,412.3	1,152.0	1,308.2
Los Angeles	1,165.5	1,212.2	1,079.8	1,124.4	787.4	1,005.2	958.1	1,085.4
San Francisco	1,119.6	1,741.0	1,822.0	2,046.8	1,123.5	1,453.4	1,548.8	1,712.4
Denver	1,001.1	1,312.2	1,581.7	1,923.2	1,158.4	1,274.4	1,443.1	2,166.1
Total banks	37	44	43	30	141	165	147	146
Average	943.5	1,026.9	1,118.0	1,325.9	939.8	942.6	1,023.1	1,207.1

*No respondents.

$$\frac{Q26}{Q10} \times 100{,}000$$

Table 6

Distribution of the Transit Return Rate

Transit Return Rate	ADL Survey Banks 1976	1977	1978	1979	All Reporting Banks 1976	1977	1978	1979
0 — 200	0	0	0	0	4	0	1	2
200 — 400	0	1	1	0	2	8	9	2
400 — 600	4	7	3	0	19	36	19	11
600 — 800	9	10	10	3	38	47	43	25
800 — 1,000	9	9	10	9	28	23	29	34
1,000 — 1,200	10	6	5	3	20	15	12	14
1,200 — 1,400	3	4	6	8	7	9	9	21
1,400 — 1,600	2	4	0	2	8	9	5	9
1,600 — 1,800	0	1	3	0	6	6	10	4
1,800 — 2,000	0	0	1	1	2	4	3	7
2,000 — 2,200	0	1	0	0	3	3	1	5
2,200 — 2,400	0	0	2	2	1	1	2	4
Over 2,400	0	1	2	2	3	4	4	8
Total banks	37	44	43	30	141	165	147	146
Average	943.5	1,026.9	1,118.0	1,325.9	939.8	942.6	1,023.1	1,207.1
Median	926.9	874.7	957.6	1,190.3	858.3	747.2	791.1	972.0

$$\frac{Q26}{Q10} \times 100{,}000$$

will continue to pose significant problems for banks as they try to cope with increasing volumes of returns through a labor intensive processing system.

Table 7 shows the distribution of banks according to their return item rate and the average dollar value of each item returned. The average value for each return item increased from $659 in 1978 to $800 in 1979. The 1977 average value appeared to have been affected by extremes in the responses from reporting banks, which is less evident in 1978 and 1979. The median value decreased slightly to $409 in the 1979 survey.

Table 7
Transit Return Dollar Value by Rate of Transit Returns

ADL Banks

Transit Returns per 100,000 Items Sent*	Number of Banks 1976	Number of Banks 1977	Number of Banks 1978	Number of Banks 1979	Average Dollar Value† 1976	Average Dollar Value† 1977	Average Dollar Value† 1978	Average Dollar Value† 1979
0 — 500	1	4	2	0	$1,174	$ 417	$1,240	$ 0
500 — 1,000	21	23	22	12	862	3,772	0	619
1,000 — 1,500	14	11	11	12	447	873	967	1,071
1,500 — 2,000	1	4	4	2	518	362	275	493
Over 2,000	0	2	4	4	0	501	812	2,166
Total banks	37	44	43	30				
Average					$ 694	$1,789	$ 771	$ 948
Median					$ 490	$ 374	$ 600	$ 620

All Banks

Transit Returns per 100,000 Items Sent*	Number of Banks 1976	Number of Banks 1977	Number of Banks 1978	Number of Banks 1979	Average Dollar Value† 1976	Average Dollar Value† 1977	Average Dollar Value† 1978	Average Dollar Value† 1979
0 — 500	10	25	16	8	$ 593	$ 428	$ 830	$ 679
500 — 1,000	81	89	85	66	659	2,124	731	555
1,000 — 1,500	32	30	22	40	411	645	885	1,102
1,500 — 2,000	11	13	17	15	497	359	310	365
Over 2,000	7	8	7	17	563	440	702	858
Total banks	141	165	147	146				
Average					$ 558	$1,186	$ 659	$ 800
Median					$ 335	$ 374	$ 417	$ 409

* $\frac{Q26}{Q10} \times 100{,}000$

† $\frac{Q27}{Q26}$

Free and Lost Items

Definitions: Free items are items received but not listed on the incoming cash letter: Lost items are items listed on the incoming cash letter but not received.

The combined average of free and lost items discovered (21.7) during 1979 was 0.4 items more per 100,000 incoming items than in 1978. However, even though the average of free and lost items remained fairly steady, the median rate increased 11.2% to 13.9 items per 100,000 incoming items in 1979 (Table 8). Tables 9 and 10 show, respectively, the rate of free items discovered and of lost items discovered. Again, there were more lost items (12.9) than free items (8.9). For the industry as a whole, the number of free items discovered should be offset by the number of lost items discovered.

The distribution of free and lost items is shown in Table 11.

Table 8

Free and Lost Items Discovered by Area
(Rate per 100,000 Incoming Items)

Area	ADL Survey Banks				All Banks			
	1976	1977	1978	1979	1976	1977	1978	1979
Boston	30.1	5.3	21.7	14.8	41.3	27.6	13.4	11.9
New York	26.4	29.9	28.1	25.6	29.2	28.1	24.8	28.7
Philadelphia	8.7	12.2	12.9	12.7	9.4	17.0	13.7	8.2
Pittsburgh	11.2	11.7	8.1	15.0	10.5	13.2	8.3	9.3
Washington, D.C.	*	*	19.4	24.3	26.8	22.1	22.6	18.5
Atlanta	34.7	35.7	35.0	30.3	16.6	22.5	21.3	20.6
Chicago	13.2	19.6	13.2	16.1	18.0	19.0	13.4	12.2
Cleveland	15.2	21.4	30.5	25.2	21.4	16.7	23.2	25.3
Detroit	21.6	53.1	37.7	40.6	25.9	48.4	39.2	17.3
Minneapolis/St. Paul	29.4	17.7	*	*	29.4	17.7	*	*
St. Louis	23.0	20.4	17.8	53.0	20.8	21.1	26.2	25.9
Dallas	32.5	51.8	40.7	37.6	30.6	44.4	43.5	52.6
Houston	*	28.5	20.0	14.3	21.0	29.8	24.6	21.0
Los Angeles	60.8	21.2	13.3	4.9	17.7	18.8	11.6	48.4
San Francisco	103.8	64.5	19.4	42.1	74.7	54.8	23.7	26.3
Denver	26.6	9.2	14.0	24.4	25.4	12.2	16.8	18.1
Total banks	37	42	43	29	141	162	152	148
Average	40.5	32.2	21.7	25.2	32.5	28.2	21.3	21.7
Median	23.2	18.2	15.1	19.5	16.7	16.1	12.5	13.9

*No respondents.

$$\frac{Q34 + Q36}{Q1 + Q2} \times 100{,}000$$

Table 9

Free Items Discovered by Area (Rate per 100,000 Incoming Items)

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	15.8	2.3	12.3	5.5	21.8	12.6	6.8	3.3
New York	9.9	11.0	11.1	11.1	13.1	10.3	10.1	6.4
Philadelphia	3.0	4.0	6.0	3.7	3.7	8.1	6.0	3.5
Pittsburgh	7.1	5.3	3.9	3.8	6.3	4.9	3.3	3.4
Washington, D.C.	*	*	*	6.8	9.3	13.3	11.4	9.6	7.5
Atlanta	11.3	14.2	13.3	10.7	6.0	8.6	7.8	7.8
Chicago	6.1	7.6	4.1	4.3	8.7	8.2	4.5	4.0
Cleveland	6.4	7.3	13.7	9.7	7.3	7.2	9.2	7.1
Detroit	9.7	27.8	13.0	21.1	12.0	23.8	13.9	16.3
Minneapolis/St. Paul	7.6	6.0	*	*	7.6	6.0	*	*
St. Louis	10.0	6.1	7.8	36.5	8.5	8.2	10.4	12.4
Dallas	15.9	31.1	18.9	14.7	12.7	24.6	23.0	23.5
Houston	*	13.2	10.6	5.2	14.5	15.6	12.3	6.4
Los Angeles	19.5	6.7	3.8	1.2	5.8	5.2	3.0	40.4
San Francisco	37.9	23.0	6.8	15.8	27.1	19.5	8.9	7.5
Denver	11.2	2.4	4.9	13.7	11.8	4.7	5.9	10.1
Total banks	37	42	43	29	141	162	152	148
Average	15.7	13.0	8.7	10.4	13.7	11.7	8.7	8.9
Median	9.4	6.3	5.2	6.6	5.7	5.3	4.5	4.1

*No respondents.

$$\frac{Q34}{Q1 + Q2} \times 100{,}000$$

Table 10

Lost Items Discovered by Area (Rate per 100,000 Incoming Items)

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	14.3	3.0	9.4	9.3	19.5	15.0	6.6	8.5
New York	16.5	19.0	17.0	14.5	16.1	17.8	14.7	22.4
Philadelphia	5.7	8.2	6.9	9.0	5.7	9.0	7.7	4.7
Pittsburgh	4.1	6.4	4.2	11.2	4.3	8.3	5.0	5.9
Washington, D.C.	*	*	12.7	15.1	13.5	10.8	13.0	11.0
Atlanta	23.4	21.5	21.6	19.7	10.6	13.9	13.5	12.8
Chicago	7.1	12.0	9.0	11.9	9.2	10.8	8.9	8.2
Cleveland	8.9	14.1	16.8	15.5	14.1	9.5	14.0	18.2
Detroit	12.0	25.4	24.7	19.6	13.8	24.5	25.3	11.9
Minneapolis/St. Paul	21.8	11.7	*	*	21.8	11.7	*	*
St. Louis	13.0	14.3	10.0	16.4	12.2	12.9	15.7	13.5
Dallas	16.6	20.7	21.7	22.9	17.9	19.8	20.5	29.1
Houston	*	15.3	9.4	9.2	6.5	14.2	12.3	14.6
Los Angeles	21.3	14.6	9.5	3.7	11.8	13.6	8.6	8.0
San Francisco	66.0	41.5	12.7	26.2	47.3	35.3	14.8	18.8
Denver	15.4	6.9	9.2	10.7	13.5	7.5	10.9	7.9
Total banks	37	42	43	29	141	162	152	148
Average	24.8	19.2	12.9	14.7	19.2	16.5	12.6	12.9
Median	13.6	11.8	9.5	12.5	9.3	9.2	7.9	8.6

*No respondents.

$$\frac{Q36}{Q1 + Q2} \times 100{,}000$$

Table 11

Distribution of the Free and Lost Items Rate

Rate	ADL Survey Banks				All Reporting Banks			
	1976	1977	1978	1979	1976	1977	1978	1979
0 — 5	1	3	1	2	18	19	18	21
5 — 10	3	3	11	5	25	27	41	37
10 — 15	6	10	9	6	19	28	27	23
15 — 20	6	5	6	2	19	19	17	14
20 — 25	5	2	2	4	15	12	7	13
25 — 30	4	6	5	1	13	12	10	7
30 — 35	3	3	2	0	7	8	7	6
35 — 40	2	0	1	1	6	8	2	7
40 — 45	1	2	0	3	2	4	4	6
45 — 50	1	1	1	1	4	3	1	4
50 — 100	3	5	5	4	7	19	13	8
Over 100	2	2	0	0	6	3	5	2
Total banks	37	42	43	29	141	162	152	148
Average	40.5	32.2	21.7	25.2	32.5	28.2	21.3	21.7
Median	23.2	18.2	15.1	19.5	16.7	16.1	12.5	13.9

$$\frac{Q34 + Q36}{Q1 + Q2} \times 100{,}000$$

Missent, Miscoded, and Listing Error Items

Definitions: Items that are discovered to have been missent for any reason, or that have been miscoded by this bank or other banks, or an eror when an item was listed for one amount but drawn for a different amount.

In 1979, the average volume of missent, miscoded, and listing error items discovered out of each 100,000 transit items sent (23.0) increased 12.2%, continuing the reversal of the downward trend observed since 1973. The median rate decreased slightly to 13.4 items (Table 12).

The average rate of missent items increased significantly to 13.5 items (Table 13), while the average rate of miscoded items decreased to earlier levels of 6.0 items in 1979 (Table 14). The average number of listing errors discovered remained stable at 3.9 items per 100,000 transit items sent in 1979 (Table 15). However, the median rate of missent and miscoded items decreased slightly during the survey period and the median rate of listing errors remained fairly constant, which indicates that the averages may have been affected by extremes during the survey period.

The distribution of items discovered by banks is shown in Table 16.

Table 12

Missent, Miscoded, and Listing Error Items Discovered by Area (Rate per 100,000 Transit Items Sent)

Area	ADL Survey Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	7.3	5.1	8.3	4.0	10.9	11.6	9.1	9.5
New York	30.5	33.1	57.6	40.6	33.0	29.1	40.4	47.2
Philadelphia	31.2	13.1	17.2	9.6	17.6	12.2	18.7	18.4
Pittsburgh	5.7	7.0	5.1	5.1	6.6	6.7	6.1	9.5
Washington, D.C.	*	*	4.1	7.7	19.3	16.1	12.1	17.7
Atlanta	15.9	41.6	45.7	46.6	14.4	18.6	21.2	26.1
Chicago	20.9	16.5	17.1	17.5	19.4	17.9	15.9	12.9
Cleveland	12.5	4.3	20.0	17.3	32.3	18.5	22.4	15.7
Detroit	171.3	15.0	23.1	4.6	121.0	24.9	21.8	17.4
Minneapolis/St. Paul	68.2	14.9	*	*	68.2	14.9	*	*
St. Louis	16.8	14.1	15.2	34.7	17.8	11.3	10.0	12.4
Dallas	23.6	9.2	12.3	26.4	29.0	10.0	13.0	53.7
Houston	*	10.9	18.4	20.6	18.5	12.5	17.9	20.3
Los Angeles	37.3	16.9	27.0	29.6	31.0	14.3	33.5	25.2
San Francisco	25.8	18.2	17.7	15.2	25.2	21.5	21.5	30.1
Denver	13.6	10.1	9.6	8.4	22.4	15.4	8.0	14.4
Total banks	37	42	42	29	141	163	150	149
Average	30.4	17.5	22.8	22.2	26.7	17.4	20.5	23.0
Median	19.1	12.8	14.1	17.2	14.8	11.5	13.6	13.4

*No respondents.

$$\frac{Q28 + Q30 + Q32}{Q10} \times 100{,}000$$

Table 13

Missent Items Discovered by Area (Rate per 100,000 Transit Items Sent)

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	0.1	1.2	0.3	0.5	3.7	5.5	1.8	2.4
New York	14.0	18.2	21.2	20.8	18.1	16.1	14.9	34.0
Philadelphia	3.9	5.8	11.1	*	4.2	4.5	8.5	10.3
Pittsburgh	2.6	1.2	0.5	0.5	3.0	1.1	0.6	2.2
Washington, D.C.	*	*	1.4	3.0	15.1	11.0	4.8	9.5
Atlanta	1.8	0.5	6.6	21.8	7.9	4.4	5.3	9.1
Chicago	10.1	5.5	5.2	6.0	10.2	7.4	5.0	5.3
Cleveland	2.6	0.1	8.7	0.1	23.1	3.9	12.4	6.8
Detroit	155.9	7.8	14.9	*	107.7	15.7	13.9	12.6
Minneapolis/St. Paul	51.3	7.1	*	*	51.3	7.1	*	*
St. Louis	5.8	2.6	1.5	8.4	10.7	3.2	1.9	2.8
Dallas	11.2	4.4	0.7	5.3	19.7	4.5	3.6	40.3
Houston	*	1.3	6.6	8.9	12.1	3.8	8.3	15.1
Los Angeles	32.1	8.1	21.0	20.8	27.0	7.5	27.8	20.8
San Francisco	14.3	10.2	7.6	3.5	15.8	13.0	9.8	20.9
Denver	4.8	2.0	2.8	1.4	14.5	8.3	3.5	6.6
Total banks	37	42	42	29	141	163	150	149
Average	18.4	7.6	9.0	8.2	17.4	8.3	8.8	13.5
Median	3.9	1.5	1.5	2.3	4.7	3.3	3.1	3.6

*No respondents.

$$\frac{Q28}{Q10} \times 100{,}000$$

Table 14

Miscoded Items Discovered by Area (Rate per 100,000 Transit Items Sent)

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	3.1	3.1	5.3	1.3	4.8	4.6	4.7	6.0
New York	14.4	12.9	33.2	12.0	12.7	10.8	22.5	9.3
Philadelphia	26.4	5.1	3.8	2.7	9.7	4.8	6.3	5.2
Pittsburgh	2.0	5.0	3.9	4.1	2.4	4.6	4.8	5.8
Washington, D.C.	*	*	1.6	4.2	2.1	2.7	4.3	5.4
Atlanta	10.5	34.6	28.6	16.2	4.7	10.8	10.0	8.4
Chicago	8.4	7.4	8.4	8.3	7.1	6.1	7.7	4.4
Cleveland	4.2	3.1	3.4	9.0	4.8	11.5	4.7	4.8
Detroit	9.8	4.2	4.3	0.3	8.6	4.2	4.2	2.6
Minneapolis/St. Paul	6.7	3.0	*	*	6.7	3.0	*	*
St. Louis	2.0	4.0	0.3	11.7	2.2	3.2	3.4	5.9
Dallas	6.4	4.5	4.7	5.4	5.2	4.3	4.1	4.0
Houston	*	5.7	9.7	2.5	3.8	5.1	7.5	1.9
Los Angeles	2.1	7.5	4.7	6.9	2.6	5.7	4.1	3.0
San Francisco	6.2	5.4	4.8	7.1	4.9	5.6	5.6	11.8
Denver	2.6	2.5	4.1	3.8	3.2	3.1	3.4	3.2
Total banks	37	42	43	29	141	163	151	150
Average	7.6	7.2	9.7	7.5	5.9	6.2	7.7	6.0
Median	4.4	4.9	4.7	5.5	3.2	3.8	3.8	4.1

*No respondents.

$$\frac{Q30}{Q10} \times 100{,}000$$

Table 15

Listing Error Items Discovered by Area (Rate per 100,000 Transit Items Sent)

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	4.0	0.8	2.7	2.2	2.5	1.5	2.6	1.1
New York	2.0	2.0	3.2	7.8	2.3	2.2	2.9	3.9
Philadelphia	0.9	2.2	2.3	7.0	3.7	3.0	3.8	2.9
Pittsburgh	1.1	0.8	0.8	0.5	1.2	0.9	0.8	1.5
Washington, D.C.	*	*	1.0	0.4	2.1	2.4	2.9	2.7
Atlanta	3.6	6.5	10.4	8.6	1.7	3.5	5.8	8.6
Chicago	2.4	3.6	3.4	3.2	2.1	4.4	3.3	3.2
Cleveland	5.8	1.0	7.9	8.2	4.4	3.2	5.3	4.2
Detroit	5.7	3.0	3.8	4.3	4.8	4.9	3.6	2.2
Minneapolis/St. Paul	10.1	4.9	*	*	10.1	4.9	*	*
St. Louis	9.0	7.4	13.4	14.7	4.9	4.8	4.7	3.8
Dallas	5.9	0.3	5.7	15.6	4.2	1.2	4.6	9.4
Houston	*	3.9	2.1	9.2	2.6	3.6	2.1	3.3
Los Angeles	3.0	1.3	1.2	2.0	1.4	1.1	1.6	1.3
San Francisco	5.4	2.7	5.3	4.6	4.5	2.9	6.1	3.1
Denver	6.2	5.6	2.8	3.2	4.8	3.9	2.1	4.5
Total banks	37	42	43	29	141	163	151	150
Average	4.5	2.7	4.0	6.4	3.4	3.0	3.9	3.9
Median	2.7	1.7	2.5	2.8	1.6	2.1	2.2	2.0

*No respondents.

$$\frac{Q32}{Q10} \times 100{,}000$$

Table 16

Distribution of Missent, Miscoded, and Listing Error Items Rate

Rate	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0 — 5	5	6	8	3	25	25	22	26
5 — 10	4	11	8	7	28	42	32	35
10 — 15	6	11	5	2	19	35	31	21
15 — 20	4	3	7	5	13	10	23	17
20 — 25	6	5	4	3	17	17	12	15
25 — 30	2	1	2	3	7	7	4	8
30 — 35	1	0	1	1	2	6	3	3
35 — 40	2	2	1	2	4	6	3	5
40 — 45	1	0	0	1	3	0	2	2
45 — 50	0	0	1	0	3	2	1	2
50 — 100	4	3	3	1	7	12	14	11
100 — 200	1	0	1	1	10	1	1	3
Over 200	1	0	1	0	2	0	2	1
Total banks	37	42	42	29	140	163	150	149
Average	30.4	17.5	22.8	22.2	26.7	17.4	20.5	23.0
Median	19.1	12.8	14.6	17.2	14.8	11.5	13.6	13.4

$$\frac{Q28 + Q30 + Q32}{Q10} \times 100{,}000$$

Exception Items Plus Return Items

Definition: Transit items that require special reconcilement with other banks, such as missent, miscoded, listing errors, returns, and free and lost items.

The average rate of exception items and transit return items discovered in 1979 was 1,266.2 items per 100,000 transit items sent. This represents an increase of 18.9% over 1978 when the rate was 1,065.1, continuing the reversal of the downward trend observed since 1973 (Table 17). Of the 144 responding banks, only 48% reported rates under 1,000 items discovered, 40% reported rates ranging from 1,000 to 2,000 items, and 12% reported rates over 2,000 items discovered, the largest number to have a rate that high since the survey began. As shown in Table 18, the median rate also increased approximately 17.7% from 887.2 items in 1978 to 1,044.5 items in 1979, reversing a similar trend and rising almost to the levels experienced in 1973-74.

The ADL banks experienced a 10.8% increase in the average rate of exceptions and return items discovered, from 1,163.2 in 1978 to 1,376.3 in 1979. Of the reporting ADL banks, only 40% reported a rate of less than 1,000 items discovered; 47% had a rate between 1,000 and 2,000 items discovered and 13% discovered more than 2,000 items per 100,000 transit items processed.

Table 17

Exception and Return Items Discovered by Area (Rate per 100,000 Transit Items Sent)

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	736.5	541.2	631.9	850.8	775.9	566.1	616.8	934.3
New York	797.3	759.1	1,005.2	1,681.5	851.7	743.3	907.3	1,383.5
Philadelphia	992.1	768.5	826.6	966.3	803.1	700.7	803.9	856.0
Pittsburgh	737.9	745.4	920.7	866.2	705.9	730.3	841.7	619.7
Washington, D.C.	*	*	1,755.5	997.8	811.8	787.4	1,075.4	1,104.5
Atlanta	1,082.6	1,396.6	912.3	1,141.8	1,152.3	1,260.3	956.8	1,351.1
Chicago	763.2	705.3	848.3	1,071.9	766.7	741.4	836.8	1,032.1
Cleveland	935.0	1,224.5	1,403.9	1,397.0	1,034.6	951.1	1,069.1	1,082.5
Detroit	1,341.6	996.8	1,010.6	1,505.7	1,020.1	835.6	945.0	1,371.5
Minneapolis/St. Paul	921.5	721.5	*	*	921.5	721.5	*	*
St. Louis	1,115.8	1,119.1	1,293.5	1,331.2	1,140.9	1,104.5	1,389.5	1,465.7
Dallas	1,352.1	966.7	1,044.2	1,376.8	1,249.6	984.8	1,006.1	1,650.6
Houston	*	1,368.4	989.3	1,212.7	1,579.2	1,451.8	1,193.7	1,346.5
Los Angeles	1,238.1	1,250.0	1,119.2	1,157.3	833.8	1,039.3	1,004.5	1,160.8
San Francisco	1,243.2	1,821.8	1,858.5	2,110.9	1,224.9	1,539.8	1,593.5	1,932.9
Denver	1,047.2	1,334.4	1,608.7	1,960.1	1,210.3	1,303.4	1,471.6	2,200.4
Total banks	37	43	43	30	141	163	147	144
Average	1,016.7	1,090.2	1,632.2	1,376.3	1,001.4	994.9	1,065.1	1,266.2

*No respondents.

$$\frac{Q26 + Q38}{Q10} \times 100{,}000$$

Table 18

Distribution of the Exception and Return Items Rate

Rate	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0 — 250	0	0	1	0	4	0	3	2
250 — 500	0	2	1	0	3	18	12	5
500 — 750	8	12	7	0	37	49	30	17
750 — 1,000	12	11	11	12	38	41	49	45
1,000 — 1,250	11	8	8	3	27	20	18	18
1,250 — 1,500	3	4	7	8	7	13	11	21
1,500 — 1,750	2	3	3	2	10	9	11	9
1,750 — 2,000	1	1	1	1	7	4	5	10
2,000 — 2,500	0	1	2	2	5	5	5	9
Over 2,500	0	1	2	2	3	4	3	8
Total banks	37	43	43	30	141	163	147	144
Average	1,016.7	1,090.2	1,163.2	1,376.3	1,001.4	994.9	1,065.1	1,266.2
Median	974.0	910.0	1,009.9	1,248.6	898.5	804.6	887.2	1,044.5

$$\frac{Q26 + Q38}{Q10} \times 100{,}000$$

Table 19
The Percent of Exceptions, Returns, and Rejects to the Number of Items Processed

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	2.5%	2.5%	2.4%	2.9%	2.3%	2.1%	2.5%	2.5%
New York	3.7	3.4	2.8	4.6	3.6	3.1	2.7	3.4
Philadelphia	2.7	2.8	2.5	1.5	2.7	2.6	2.6	2.3
Pittsburgh	2.3	1.9	2.1	1.8	2.4	2.0	2.0	1.9
Washington, D.C.	*	*	2.6	1.6	3.1	2.4	2.7	2.6
Atlanta	2.3	3.7	3.4	2.6	3.3	3.2	2.8	3.0
Chicago	3.0	2.3	2.6	3.4	2.8	2.5	2.6	2.8
Cleveland	2.9	2.8	2.4	2.4	3.3	3.1	2.6	2.9
Detroit	3.1	2.9	2.5	2.1	2.9	3.2	2.4	3.2
Minneapolis/St. Paul	2.4	2.3	*	*	2.4	2.3	*	*
St. Louis	2.6	2.7	2.8	2.6	2.7	2.8	3.1	3.0
Dallas	3.3	2.6	3.7	4.1	3.9	2.8	3.6	3.3
Houston	*	2.9	3.3	3.5	6.9	3.8	3.5	3.0
Los Angeles	2.8	2.4	2.7	2.2	2.4	2.2	2.4	2.8
San Francisco	2.0	2.5	2.3	2.4	2.2	2.4	2.2	3.6
Denver	2.8	2.4	2.6	3.3	3.1	2.8	3.4	3.2
Total banks	37	43	41	30	141	161	142	144
Average	2.7%	2.7%	2.6%	3.1%	2.8%	2.7%	2.6%	2.9%
Median	2.8%	2.5%	2.6%	2.7%	2.8%	2.5%	2.6%	2.7%

$$\frac{Q21 + Q26 + Q38}{Q15} \times 100$$

*No respondents.

Table 20
The Distribution of Exceptions, Returns, and Reject Rate

Rate	ADL Survey Banks 1976	1977	1978	1979	All Reporting Banks 1976	1977	1978	1979
0%-1.5%	0	2	0	0	5	9	6	6
1.5%-2.0%	4	3	8	4	14	20	22	16
2.0%-2.5%	11	15	8	9	34	45	36	37
2.5%-3.0%	8	8	14	6	27	32	33	34
3.0%-3.5%	8	12	4	4	19	24	18	20
3.5%-4.0%	4	0	5	2	16	8	11	12
4.0%-4.5%	1	2	1	1	11	12	9	8
4.5%-5.0%	1	1	0	2	4	4	3	5
5.0%-5.5%	0	0	1	1	2	1	1	1
5.5%-6.0%	0	0	0	0	4	1	1	1
6.0%-6.5%	0	0	0	0	1	1	1	1
6.5%-7.0%	0	0	0	0	1	1	1	1
7.0%-7.5%	0	0	0	0	1	1	0	1
Over 7.5%	0	0	0	1	1	2	0	1
Total banks	37	43	41	30	140	161	142	144
Average	2.7	2.7	2.6	3.1	2.8	2.7	2.6	2.9
Median	2.8	2.5	2.6	2.7	2.8	2.5	2.6	2.7

$$\frac{Q21 + Q26 + Q38}{Q15} \times 100$$

Table 19 shows the percent of exceptions, returns, and reject items to the total volume of items processed. All of these items require special handling. For all banks in 1979, the average rate was 2.9% as compared with 2.6% in 1978. The median rate, however, increased to 2.7% in 1979, a continuation of a recent upward trend.

Table 20 shows the number of banks distributed according to their rate of exceptions, returns, and rejects.

A Dollar Analysis of Return and Exception Items

During the survey week, 149 banks collected data on the dollar value of the return and exception items processed. The data are shown by geographic area in Table 21. The dollar value of return items processed was nearly $2.0 billion, as compared with nearly $1.5 billion in 1978 and $2.7 billion in 1977.

The total exception dollars discovered by the 149 reporting banks was $1.4 billion during the 1979 survey week, while nearly $1.1 billion was resolved. The average exception item dollar amount discovered by a participating bank was approximately $9.4 million, and an average of $7.2 million was resolved during the survey week.

Outstanding Exception Items

Table 22 compares the outstanding exception dollars and number of items on an aged basis for 144 reporting banks. In 1979, 70.0% of the dollars were less than 30 days old, whereas in 1978 approximately 67.8% of the dollars were less than 30 days old. Each of the aged distributions of exception items shows a similar trend toward improvement from the 1978 levels. The aged distribution of outstanding exception items caused considerable concern among bankers as it continued a worsening trend from the early years of the survey. Even though the days outstanding has shown some improvement, the total dollar amount of outstanding exception items increased 96.0%, while the number of items remained almost unchanged.

Table 23 compares the aged distribution of outstanding exception items for the average bank according to the method used to microfilm items — after reader/sorter processing, before reader/sorter processing or during reader/sorter processing. Because of the various resource sizes of the reporting banks, the amount and the number of items outstanding should not be compared. The key comparison is the relative percentage.

The data indicate that banks that microfilm after reader/sorter processing resolve their items and dollars more rapidly than banks that use other methods. In 1978, on the other hand, banks that filmed during reader/sorter processing fared somewhat better than the other methods, especially after the first four months outstanding.

A Comparison of Balancing Policy and Experience

Table 24 compares how bankers responded since 1976 to questions regarding the balancing procedures, their evaluation of the growth of the exception item problem, and the status of personnel responsible for making adjustments in reconciliation.

Table 21

Return and Exception Item Dollar Analysis by Area (During the Survey Week)

Area	Return Items		Exception Items Discovered		Exception Items Resolved	
	Total $ Discovered*	Average $ Value/ Item†	Total $ ‡	Average $ Value/ Item §	Total $ ‖	Average $ Value/ Item #
Boston	$ 38,237,823	$ 446	$ 25,726,054	$15,555	$ 17,914,509	$13,488
New York	409,705,055	968	311,703,217	27,145	281,503,034	52,933
Philadelphia	73,572,678	507	20,760,091	2,740	19,393,817	6,104
Pittsburgh	31,101,717	594	1,868,418	1,132	2,141,116	1,171
Washington, D.C.	239,539,586	2,974	20,701,959	11,056	18,470,634	11,374
Atlanta	161,197,072	471	389,623,798	20,934	216,368,485	21,447
Chicago	141,513,353	680	103,669,618	64,658	57,290,355	10,442
Cleveland	91,445,195	753	31,946,847	5,625	35,052,882	10,300
Detroit	25,157,158	463	5,338,899	2,091	3,427,005	1,893
Minneapolis/St. Paul	**	**	**	**	**	**
St. Louis	57,351,771	318	48,609,830	7,054	33,578,213	5,737
Dallas	259,899,791	1,434	80,923,100	11,023	45,880,829	10,851
Houston	55,521,267	463	111,546,843	15,424	80,299,451	49,172
Los Angeles	51,955,591	733	9,498,140	1,740	12,219,262	3,357
San Francisco	290,310,341	363	139,753,561	8,129	129,762,083	8,518
Denver	81,527,007	1,036	98,473,427	28,182	125,813,129	66,776
Total 149 Banks	$2,008,035,405	—	$1,400,143,802	—	$1,079,114,802	—
1979 Average 149 Banks	$ 13,476,748	$ 727	$ 9,396,938	$14,802	$ 7,242,381	$18,747
1978 Average 146 Banks	10,132,913	659	4,695,338	7,442	4,430,940	8,790
1977 Average 161 Banks	16,712,033	1,208	5,069,149	7,104	5,415,808	9,092
1976 Average 141 Banks	6,917,516	558	3,863,188	4,759	3,574,476	5,276
1979 Median 149 Banks	$ 3,765,978	$ 409	$ 723,152	$ 2,968	$ 662,562	$ 2,970
1978 Median 146 Banks	3,845,017	417	773,775	2,186	606,187	2,262
1977 Median 161 Banks	3,004,271	372	664,753	2,304	524,255	2,202
1976 Median 141 Banks	2,535,882	335	566,372	1,421	552,670	1,945

*Q27; † Q27 ÷ Q26; ‡ Q40; § Q40 ÷ Q38; ‖ Q41; # Q41 ÷ Q39;** no respondents.

Table 22

The Age Distribution of Outstanding Exception Items

Dollars Outstanding

Months Outstanding	1977 155 Banks Dollars	1977 155 Banks Percent	1978 146 Banks Dollars	1978 146 Banks Percent	1979 144 Banks Dollars	1979 144 Banks Percent
0—1	$328,737,360	73.4%	$297,198,484	67.8%	$601,659,846	70.0%
1—2	65,150,334	14.6	68,699,210	15.7	156,719,650	18.2
2—4	36,588,770	8.2	42,270,491	9.7	57,975,289	6.8
4—6	11,663,146	2.6	19,464,360	4.4	29,496,372	3.4
Over 6	5,180,820	1.2	10,581,528	2.4	13,131,047	1.6
Total	$447,320,430	100.0%	$438,214,073	100.0%	$859,982,204	100.0%

Q62 = Q63 + Q64 + Q65 + Q66 + Q67

Items Outstanding

Months Outstanding	1977 155 Banks Items	1977 155 Banks Percent	1978 146 Banks Items	1978 146 Banks Percent	1979 144 Banks Items	1979 144 Banks Percent
0—1	89,579	29.0%	87,535	25.3%	104,396	29.9%
1—2	65,347	21.2	66,527	19.2	87,499	25.2
2—4	74,449	24.1	95,115	27.5	70,537	20.2
4—6	40,735	13.2	57,242	16.6	46,421	13.3
Over 6	38,829	12.6	39,319	11.4	39,914	11.4
Total	308,939	100.0%	345,738	100.0%	348,767	100.0%

Q68 = Q69 + Q70 + Q71 + Q72 + Q73

Table 23

The Age Distribution of Outstanding Exception Items by the Microfilming Method (Average Reporting Banks)

Dollars Outstanding

Months Outstanding	After Reader/Sorter Processing				Before Reader/Sorter Processing				During Reader/Sorter Processing			
	1978 Dollars	1979 Dollars	1978 Percent	1979 Percent	1978 Dollars	1979 Dollars	1978 Percent	1979 Percent	1978 Dollars	1979 Dollars	1978 Percent	1979 Percent
0—1	$1,904,149	$773,975	74%	82%	$958,252	$1,709,250	55%	62%	$1,809,572	$5,117,991	68%	78%
1—2	266,857	93,183	10	10	417,629	453,915	24	16	559,280	861,386	21	13
2—4	270,162	57,575	11	6	209,839	319,675	12	12	205,071	287,660	8	4
4—6	54,807	13,624	2	2	165,120	138,012	9	5	48,889	194,078	2	3
Over 6	68,636	6,875	3	0.7	6,562	153,345	0.4	5	27,691	120,487	1	2
Total	$2,564,611	$945,232	100%	100%	$1,757,402	$2,774,197	100%	100%	$2,650,503	$6,581,602	100%	100%

Items Outstanding

Months Outstanding	After Reader/Sorter Processing				Before Reader/Sorter Processing				During Reader/Sorter Processing			
	1978 Items	1979 Items	1978 Percent	1979 Percent	1978 Items	1979 Items	1978 Percent	1979 Percent	1978 Items	1979 Items	1978 Percent	1979 Percent
0—1	451	176	32%	41%	357	412	40%	26%	653	851	35%	31%
1—2	291	112	21	26	242	281	27	18	380	784	20	29
2—4	298	100	21	23	179	336	20	22	584	383	31	14
4—6	156	33	11	8	82	190	9	12	152	318	8	12
Over 6	206	10	15	2	36	339	4	22	115	379	6	14
Total	1,402	431	100%	100%	896	1,558	100%	100%	1,884	2,715	100%	100%

Table 24

A Comparison of Balancing Policy and Experience

Balancing Procedures

	1976	1977	1978	1979
Always balance	7%	6%	7%	5%
Attempt to balance	82	81	85	78
Very seldom balance	11	13	8	17

Exception Item Growth

	1976	1977	1978	1979
Grown	50%	51%	59%	67%
Remained the same	26	30	26	26
Decreased	24	19	15	7

Adjustment Staff Size

		Number of People		
	147 Banks	1978	1979	Percent Gain or Loss
Grown	44%	1,253	1,455	+16.2%
Remained the same	50	1,151	1,151	
Decreased	6	116	99	−14.7
Total	100%	2,520	2,705	+ 7.3%

More bankers than ever before experienced an increase in their exception item volume, and added personnel to process the additional volume. The detailed analysis of the adjustment staff size reveals that 44% of the responding banks increased their staff by approximately 16%, while only 6% of the banks decreased their staff an average of 15%. The net overall gain in staff reported by the banks surveyed was over 7% or 185 adjustment personnel. The increase from 1977 to 1978 was only 2.0% additional adjustment personnel, and only 0.3% from 1976 to 1977.

Transit Holdover

Definition: Items in transit holdover are those items that were received by a bank before a deadline but were not processed by high- or low-speed systems in time to be sent for collection. These items would result in a loss of float to the bank but not to its customers.

While transit holdover may not be considered a characteristic of system failure, it is an important performance measure that reflects the speed with which checks are

collected. In 1979, the average dollar value of each item held over was $661, an increase since 1978 when the average dollar was $517, but still lower than the 1977 figure of $1,181 for the average dollar value of each item held over. The median, however, was $430 in 1979 (Table 25), a 59.3% increase, after remaining fairly constant during recent survey periods.

In the 1979 survey week, 2.5% of the transit items processed were held over, continuing a decreasing trend from 1978 when the holdover rate was 2.8%. The median rate remained constant for the 153 reporting banks at 0.5% in 1979 as shown in Table 26.

Table 25

Transit Holdover by Area
(Percent of Total Transit Items)

	ADL Banks				All Banks			
Area	**1976**	**1977**	**1978**	**1979**	**1976**	**1977**	**1978**	**1979**
Boston	1.7%	0.8%	1.0%	1.2%	4.2%	3.9%	0.5%	0.1%
New York	12.6	9.5	9.6	5.1	10.0	7.2	6.2	2.0
Philadelphia	8.2	2.9	0.0	0.0	2.5	2.0	0.2	2.0
Pittsburgh	11.9	8.8	7.5	2.7	10.2	8.1	6.1	1.6
Washington, D.C.	*	*	2.1	0.0	3.8	1.5	3.3	1.9
Atlanta	0.2	0.3	0.5	4.5	3.4	4.2	2.2	5.8
Chicago	5.0	3.3	2.4	3.3	4.5	6.0	2.9	4.7
Cleveland	11.1	9.9	12.2	0.7	7.5	7.2	6.4	1.6
Detroit	0.8	9.9	1.8	1.4	1.6	6.9	1.6	1.1
Minneapolis/St. Paul	2.1	1.7	*	*	2.1	1.7	*	*
St. Louis	1.9	1.1	0.5	1.5	6.4	9.5	7.7	2.9
Dallas	0.4	0.2	2.3	0.1	1.5	0.4	2.3	0.5
Houston	*	5.8	2.3	1.7	1.1	4.4	2.1	7.3
Los Angeles	5.7	1.5	0.9	0.9	3.0	1.9	1.5	0.4
San Francisco	1.6	2.0	0.4	0.7	1.4	1.5	0.4	1.3
Denver	0.8	0.9	0.4	1.1	0.8	0.9	0.5	0.5
Total banks	37	44	43	30	141	168	153	153
Average	4.9%	4.1%	3.0%	2.2%	4.3%	4.2%	2.8%	2.5%

	1976	**1977**	**1978**	**1979**
Average dollar value of item held over	$439	$1,181	$517	$661
Median dollar value of item held over	$250	$ 294	$270	$430

*No respondents.

$$\frac{Q10}{Q10 + Q11} \times 100$$

Table 26

The Distribution of the Transit Holdover Rate
(Percent of Total Transit Items)

Rate	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0 — 1%	12	18	22	14	68	88	93	93
1 — 2%	8	5	4	5	22	19	16	19
2 — 3%	1	6	2	2	13	12	8	9
3 — 4%	1	3	2	3	6	8	6	6
4 — 5%	3	2	1	1	5	7	5	3
5 — 10%	7	4	7	4	12	14	13	14
10 — 15%	2	5	1	1	6	8	5	5
15 — 20%	2	0	2	0	3	2	3	1
20 — 30%	1	0	2	0	4	6	4	1
Over 30%	0	1	0	0	2	4	0	2
Total banks	37	44	43	30	141	168	153	153
Average	4.9%	4.1%	3.0%	2.2%	4.3%	4.2%	2.8%	2.5%
Median	1.7%	1.7%	0.9%	1.2%	1.1%	0.9%	0.5%	0.5%

$$\frac{Q10}{Q10 + Q11} \times 100$$

Problems Reported by Bankers

Bankers also were asked to list the problems they were experiencing in the check collection and processing operations. In all, 51 bankers described a wide range of problems. The most often mentioned problems in their frequency of ranking included:

Problems Reported	Rank 1976	1977	1978	1979
Resolving discrepancies and adjustments	1	1	2	1
Personnel turnover and training	3	3	1	2
Transportation and mail	5	5	4	3
Reject Rates and reject handling	2	4	3	4
Equipment and system problems	4	2	5	5
Fraud	6	6	6	6

The major concerns of bankers in 1979 were adjustments and reconciliations. However, problems in personnel turnover/training received almost as many comments as those regarding adjustments, and are no less a concern than in previous years. Transportation continued to be of major concern to bankers, especially those in branching states. Fraud related problems received almost no comments from

responding bankers, even though turnover problems create potentially difficult situations.

Some representative comments of bankers participating in the 1979 survey are given in Appendix C.

Bank Labor Productivity Measurement

This section on check processing productivity presents an analysis of data gathered concerning the distribution of manpower according to the following major task groupings:

- Data control (balancing and correction).
- Encoding operations.
- Reader/sorter operations.
- Cash letter make-up.
- Microfilming operations.
- On-us paying, filing, and return item processing.
- Exception item processing.

The labor data reported were generally comprehensive. The problem of rounding off was eliminated by requesting the actual item count. Productive man-hours rather than man-days provided a more uniform base. Both the average (arithmetic mean) and median (midpoint value) of the distributions were made.* Caution should be exercised when comparisons are made between the following data and individual bank distributions.

Labor Intensiveness

The average total productivity of the 151 reporting banks for the combined check processing tasks increased only 1.4% in 1979 to 530.0 items processed per man-hour from 522.9 items processed per man-hour in 1978 (Table 27). The 1979 median rate, however, increased approximately 3.4% over the 1978 rate, rising almost to the 1977 level. The increase in 1979 follows the first ever decrease in median labor productivity.

For the first time since 1974, a bank reported overall labor productivity of less than 100 items per man-hour. Three banks reported overall labor productivity of between 100 and 200 items per man-hour in 1979, while no banks were in that category in 1978.

*The median, by definition, is unaffected by extreme values and is useful as a measure of central tendencies when extreme values are present.

Table 27

Overall Labor Productivity

Checks per Man-Hour	Number of Banks 1976	1977	1978	1979
Under 100	0	0	0	1
100 — 200	2	1	0	3
200 — 300	15	12	8	12
300 — 400	33	27	31	37
400 — 500	34	37	31	27
500 and over	56	73	62	71
Total banks	140	150	132	151
Average	404.7	457.7	522.9	530.0
Median	454.2	493.9	474.2	490.3

$$\frac{\text{Q15}}{\text{Sum of Q42 through Q60}}$$

Table 28

Overall Labor Productivity by Area

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	484.2	530.6	507.5	722.4	523.2	558.3	573.9	566.1
New York	350.6	376.4	380.2	397.0	353.4	394.7	392.7	388.0
Philadelphia	595.2	824.8	823.7	332.5	474.2	580.0	581.2	587.7
Pittsburgh	628.3	598.9	618.9	604.6	530.1	579.3	563.4	661.5
Washington, D.C.	*	*	435.2	460.0	328.8	499.2	555.5	522.0
Atlanta	388.8	376.0	459.9	541.9	407.7	472.7	496.2	513.0
Chicago	372.4	391.5	406.9	376.1	370.4	458.5	399.7	548.1
Cleveland	392.8	497.6	479.4	437.7	421.0	481.5	467.8	480.3
Detroit	323.3	329.6	357.0	379.2	376.6	379.1	376.2	529.5
Minneapolis/St. Paul	464.7	575.9	*	*	464.7	575.9	*	*
St. Louis	493.0	597.5	596.5	626.5	599.6	547.0	552.0	542.4
Dallas	492.2	805.9	954.8	723.2	508.5	715.3	871.2	628.6
Houston	*	661.4	861.4	677.9	274.6	485.4	730.0	492.5
Los Angeles	524.1	451.9	381.3	544.3	601.6	509.0	476.3	641.6
San Francisco	306.7	336.9	957.1	618.0	334.2	353.0	686.1	508.4
Denver	524.5	625.7	703.1	495.6	401.2	570.1	587.6	516.9
Total banks	37	44	43	30	141	150	118	151
Average	375.3	432.1	550.8	514.7	404.7	457.7	522.9	530.0
Median	438.0	489.2	508.6	529.0	454.2	493.9	474.2	490.3

*No respondents.

$$\frac{\text{Q15}}{\text{Sum of Q42 through Q60}}$$

Table 28 presents the total productivity by geographic area. The ADL survey banks showed a reduction in the overall labor productivity for the first time. Further, between 1978 and 1979, eight areas reported a decrease in overall labor productivity, with only seven reporting an increase. The lowest rate reported by an area was 388.0 items per man-hour, higher than in 1978; the highest rate reported was 661.5 items per man-hour, lower than in 1978.

Labor Distribution

A distribution of the percentage of labor among various tasks performed is shown in Table 29. Only minor changes were noted in 1979. Encoding operations time increased slightly, while the time reported for data control — balancing and correction — took a slightly smaller portion of the total processing time.

Data Control — Balancing and Correction

In 1979, both the average and median rates for labor productivity in the balancing and correction functions decreased over 1978 (Table 30). The average number of checks processed per man-hour in 1979 was 2,455.9, while in 1978 the average was 2,558.9. The increasing productivity trend in this area seems to indicate the advent of improved technology for the data control area, because the labor productivity did not decline beyond pre-1978 levels.

Encoding Operations

Table 31 presents the combined average labor productivity for single-pocket and multipocket encoders. The 1979 average number of items encoded per man-hour was 859.1, a decrease over the 1978 rate of 927.6 items. However, the median rate further reflected the decrease in labor productivity by declining approximately 2.2% in 1979. This follows the drop in productivity in the encoding area first experienced in the 1978 survey.

Tables 32 and 33 show the encoding productivity for single-pocket and multipocket machines. The average number of items encoded on a single-pocket machine was 881.4 items per man-hour, an increase from the 844.9 items per man-hour in 1978, but not up to the 929.6 items per man-hour reported in 1977. The median rate of encoding labor productivity on single-pocket machines again decreased during the 1979 survey period. Both the average and the median rates for encoding labor productivity on multipocket machines decreased again in 1979.

Table 34 shows the number of items encoded per man-hour by the percent of pre-encoded items received. In 1979, the banks that received the highest percentage of encoded items reported the lowest encoding productivity. The 1979 survey appears to show some correlation between the receipt of pre-encoded items and productivity in the encoding function.

Table 29

The Distribution of Labor by Overall Labor Productivity

Checks per Man-Hour*	Number of Banks	Percent of Labor by Tasks†						
		A	B	C	D	E	F	G
Under 200	4	24.5	33.1	3.1	4.0	31.0	2.8	1.5
200 — 300	12	15.5	19.4	4.2	11.3	31.5	8.2	10.0
300 — 400	37	15.0	30.9	3.0	5.7	33.6	5.6	6.2
400 — 500	27	16.6	32.2	4.8	5.5	30.4	5.8	4.6
500 — 600	27	18.5	31.3	4.7	7.1	27.3	7.5	3.5
600 and over	44	22.6	31.0	4.5	9.8	20.5	7.5	4.1
Average, all banks 1979	151	18.4	30.4	4.2	7.5	27.9	6.6	5.0
Average, all banks 1978	132	20.0	26.7	3.9	7.4	28.2	6.3	7.5
Average, all banks 1977	150	20.1	26.3	3.5	7.5	30.5	6.4	5.8
Average, all banks 1976	140	19.9	25.2	3.2	7.4	32.6	6.2	5.6
ADL 1979	30	23.3	25.7	4.8	7.8	22.6	9.0	6.7
ADL 1978	43	21.8	23.8	4.4	8.0	26.7	6.7	8.6
ADL 1977	44	21.0	23.6	3.8	7.3	32.5	6.4	5.5
ADL 1976	37	20.1	23.0	3.3	7.1	33.2	6.7	6.6

* $\frac{Q15}{\text{Sum of Q42 through Q60}}$

† Tasks

A. — Data control — balancing and correction $\frac{Q44 + Q45}{Q61} \times 100$

B. — Encoding operations $\frac{Q46 + Q47 \quad Q48 + Q49}{Q61} \times 100$

C. — Reader/sorter operations $\frac{Q50 + Q51}{Q61} \times 100$

D. — Cash letter make-up and microfilming operations $\frac{Q52 + Q53 + Q54 + Q55}{Q61} \times 100$

E. — On-us paying, filing, and return item processing $\frac{Q56 + Q57 + Q58 + Q59}{Q61} \times 100$

F. — Exception item processing $\frac{Q42 + Q43}{Q61} \times 100$

G. — Non-officer processing time not including "A" through "F" tasks $\frac{Q60}{Q61} \times 100$

Table 30

Balancing and Correction Labor Productivity

Checks per Man-Hour	1976	1977	1978	1979
Under 1,000	6	2	2	9
1,000—2,000	35	36	29	24
2,000—3,000	44	48	42	47
3,000—4,000	15	19	22	23
4,000—5,000	7	19	16	12
5,000—6,000	8	6	10	2
6,000—7,000	7	5	4	5
7,000—8,000	3	2	6	5
8,000 and over	16	24	18	24
Total banks	141	161	149	151
Average	2,110.8	2,385.5	2,558.9	2,455.9
Median	2,651.0	2,822.6	3,027.9	2,894.6

$$\frac{Q9}{Q44 + Q45}$$

Table 31

Encoding Labor Productivity

	Number of Banks			
Checks per Man-Hour	1976	1977	1978	1979
Under 400	5	2	2	8
400— 500	5	4	1	3
500— 600	14	12	19	14
600— 700	16	20	14	24
700— 800	29	24	27	23
800— 900	29	32	29	31
900—1,000	17	19	28	17
1,000 and over	26	52	31	31
Total banks	141	165	151	151
Average	751.9	841.2	927.6	859.1
Median	807.6	866.9	833.9	815.8

$$\frac{Q3 + Q4 + Q5 + Q6}{Q46 + Q47 + Q48 + Q49}$$

Table 32

Encoding Labor Productivity for the Single-Pocket Machine

Checks per Man-Hour	Number of Banks 1976	1977	1978	1979
0— 100	3	0	0	1
100— 200	1	0	0	0
200— 300	0	0	1	0
300— 400	1	3	0	3
400— 500	7	3	1	2
500— 600	6	9	11	9
600— 700	13	16	14	24
700— 800	17	18	21	19
800— 900	28	24	27	27
900—1,000	18	21	27	16
1,000—1,100	7	12	11	16
1,100—1,200	7	14	8	4
Over 1,200	11	24	11	14
Total banks	119	144	132	135
Average	814.5	929.6	844.9	881.4
Median	843.3	896.0	864.2	849.1

$$\frac{Q3 + Q4}{Q46 + Q47}$$

Table 33

Encoding Labor Productivity for the Multipocket Machine

Checks per Man-Hour	Number of Banks 1976	1977	1978	1979
0— 100	2	2	3	3
100— 200	3	2	3	4
200— 300	2	8	3	5
300— 400	6	5	6	6
400— 500	7	7	7	3
500— 600	5	6	10	4
600— 700	6	11	5	6
700— 800	8	7	7	9
800— 900	4	18	11	8
900—1,000	4	5	4	0
1,000—1,100	3	2	1	1
1,100—1,200	2	2	2	1
Over 1,200	5	5	3	2
Total banks	57	80	65	52
Average	661.4	696.1	656.5	627.8
Median	682.9	698.3	620.6	610.2

$$\frac{Q5 + Q6}{Q48 + Q49}$$

Table 34

Items Encoded per Man-Hour by Percent of Pre-encoded Items

Percent of Incoming Items Already Encoded*	Number of Banks				Items Encoded per Man-Hour†			
	1976	1977	1978	1979	1976	1977	1978	1979
80%—100%	8	7	9	11	643.2	794.0	735.0	652.2
60%— 80%	39	45	39	36	799.8	870.8	809.9	788.6
40%— 60%	62	64	64	52	718.2	823.9	776.5	868.5
0%— 40%	32	48	38	52	835.2	849.6	874.8	943.1
Total banks	141	164	150	151				
Productivity					751.9	841.1	803.3	859.1

* $\frac{Q1 + Q2}{Q9} \times 100$

† $\frac{Q3 + Q4 + Q5 + Q6}{Q46 + Q47 + Q48 + Q49}$

Reader/Sorter Operations

Average reader/sorter labor productivity increased slightly between 1978 and 1979 (Table 35), but remained near the 1978 level that had reversed an upward trend followed since 1972. The median rate again decreased significantly from 1978 to 16,675.1 items in 1979. Of the reporting banks, 70% processed over 10,000 items per man-hour, less than the 76% in 1978 and 1977, as compared with 78% in 1976.

Table 35

Reader/Sorter Labor Productivity

Checks per Man-Hour	Number of Banks			
	1976	1977	1978	1979
Under 5,000	13	8	7	17
5,000—10,000	18	32	29	28
10,000—15,000	19	25	26	25
15,000—20,000	16	25	14	12
20,000—25,000	21	16	19	12
25,000—30,000	12	13	19	19
30,000 and over	41	45	36	38
Total banks	140	164	150	151
Average	12,688.9	13,311.5	12,423.4	12,526.9
Median	20,643.3	18,466.7	18,309.6	16,675.1

$\frac{Q7}{Q50 + Q51}$

Cash Letter Make-Up and Microfilming

Combined cash letter make-up and microfilming labor productivity is shown in Table 36. The average rate of items processed per man-hour decreased significantly in 1979. The average rate was 6,261.0 items per man-hour, a 13.8% decrease, while the median rate increased almost as drastically to 8,612.8 items.

Separate tables are shown for cash letter make-up (Table 37) and microfilming (Table 38). Again, both average and median rates for cash letter make-up productivity decreased in 1979. However, the average rate of items microfilmed per man-hour increased from 11,129.7 items per man-hour in 1978 to 12,609.1 items in 1979. The median rate continued to decrease in 1979 for microfilming, dropping to 8,790.3 items per man-hour from the 1978 rate of 10,175.6 items.

Approximately 16% of the microfilmed items were filmed before reader/sorter processing, 12% were microfilmed after reader/sorter processing, and nearly 72% of the items were microfilmed during reader/sorter processing, reflecting the increase in in-line microfilming.

Table 36

Cash Letter Make-Up and Microfilming Labor Productivity

	Number of Banks			
Checks per Man-Hour	**1976**	**1977**	**1978**	**1979**
Under 1,000	1	0	0	1
1,000— 2,000	2	0	2	6
2,000— 3,000	3	7	7	5
3,000— 4,000	9	8	11	10
4,000— 5,000	9	14	5	11
5,000— 6,000	18	12	18	13
6,000— 7,000	13	10	12	9
7,000— 8,000	9	18	18	13
8,000— 9,000	15	17	6	12
9,000—10,000	13	6	13	10
10,000 and over	49	69	51	62
Total banks	141	161	143	152
Average	7,039.2	7,305.9	7,262.3	6,261.0
Median	8,412.9	8,590.7	7,823.4	8,612.8

$$\frac{Q10 + Q11 + Q22 + Q23}{Q52 + Q53 + Q54 + Q55}$$

Table 37

Cash Letter Make-Up Labor Productivity

Checks per Man-Hour	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0— 2,000	2	0	4	1	12	6	8	11
2,000— 4,000	9	8	6	5	28	26	24	26
4,000— 6,000	10	16	17	7	28	33	34	22
6,000— 8,000	7	7	5	7	22	25	17	21
8,000—10,000	4	1	4	6	14	13	15	20
10,000—12,000	2	3	4	0	5	15	16	12
12,000—15,000	1	3	1	2	8	13	10	12
15,000 and over	2	5	2	2	23	30	24	28
Total banks	37	43	43	30	140	161	148	152
Average	5,120.2	5,873.1	5,073.7	4,996.5	5,112.2	5,993.6	5,626.3	5,556.6
Median	5,577.7	5,926.8	5,424.9	6,495.7	6,330.5	7,329.8	6,878.2	7,514.7

$$\frac{Q10 + Q11}{Q52 + Q53}$$

Table 38

Microfilming Labor Productivity

Checks per Man-Hour	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0— 2,000	1	4	13	5	3	12	24	20
2,000— 4,000	1	5	2	3	2	10	6	16
4,000— 6,000	3	7	6	3	15	18	13	15
6,000— 8,000	2	6	2	4	13	22	9	11
8,000—10,000	6	0	3	2	23	14	20	13
10,000—12,000	7	6	6	0	25	19	27	12
12,000—15,000	7	6	4	1	22	22	18	12
15,000 and over	10	10	7	7	38	48	30	35
Total banks	37	44	43	25	141	165	147	134
Average	8,924.3	7,915.1	12,222.7	14,439.2	9,758.0	9,247.8	11,129.7	12,609.1
Median	11,749.8	8,976.1	6,543.4	6,358.0	11,451.5	10,873.8	10,175.6	8,790.3

$$\frac{Q22 + Q23}{Q54 + Q55}$$

On-Us Processing — Paying, Filing, and Return Items

Average on-us labor productivity increased nearly 28% between 1978 and 1979. However, the median rate of on-us processing labor productivity increased only slightly from 697.7 items per man-hour in 1978 to 705.6 items in 1979 (Table 39). An analysis of the relationship between labor productivity for processing on-us items and the percentage of on-us items received by the bank is shown in Table 40.

Table 39

On-Us Processing Labor Productivity
(Paying, Filing, and Return Item Processing)

Checks per Man-Hour	Number of Banks			
	1976	1977	1978	1979
Under 200	1	2	0	8
200— 300	6	4	4	5
300— 400	16	13	13	14
400— 500	19	19	16	20
500— 600	19	21	19	18
600— 700	21	17	20	9
700— 800	13	12	11	14
800— 900	10	13	7	10
900—1,000	8	13	10	12
1,000 and over	25	43	43	41
Total banks	138	157	143	151
Average	554.8	645.2	830.6	1,066.3
Median	613.8	721.4	697.7	705.6

$$\frac{Q12 + Q13 + Q14}{Q56 + Q57 + Q58 + Q59}$$

Table 40

The Percent of On-Us Items Received and On-Us Processing Labor Productivity

Percent of On-Us Items Received*	Number of Banks				Checks Processed per Man-Hour†			
	1976	1977	1978	1979	1976	1977	1978	1979
Under 20%	9	15	12	11	628.0	532.1	586.5	564.2
20—40%	39	51	43	50	479.7	649.6	623.6	785.1
40—60%	64	67	61	60	544.6	707.7	851.4	1,225.8
60% and over	26	24	26	30	724.8	583.5	1,137.1	1,400.2
Total banks	138	157	142	151				
Average productivity					554.8	645.2	830.6	1,006.3

* $\frac{Q12 + Q13 + Q14}{Q15} \times 100$

†Average within each percentage group.

Exception and Return Item Processing

Average productivity for exception and return item processing again increased substantially in 1979 to 34.4 items per man-hour. The median rate also increased dramatically to 27.8 items per man-hour from the 1978 level of 23.1 items. Both average and median exception and return item labor productivity were the highest since the survey was initiated (Table 41).

Table 42, Return Item Productivity, is a new table. The 1979 survey indicated that the average labor productivity for return items was 84.8 items per man-hour. The median return item labor productivity was 48.7 items per man-hour. The trend in return item labor productivity will be revealed by further surveys.

Table 43 presents the number of items resolved per man-hour compared to the exception and return items discovered. Table 44 presents exception item productivity.

Automated Reject Processing Productivity

The productivity experienced by the 65 reporting banks for automated reject processing was examined for the second year in the 1979 survey (Tables 45 and 46). The average productivity increased slightly to 308.6 items per man-hour. The median was higher at 395.1 items per man-hour, a 6.0% decline from the 1978 level. This figure included both the automated and manual reject processing man-hours expended. Further surveys will help to refine the trend in automated reject processing productivity.

Table 41

Exception and Return Item Productivity

	ADL Banks				All Banks			
Items per Man-Hour	**1976**	**1977**	**1978**	**1979**	**1976**	**1977**	**1978**	**1979**
Under 5	0	0	0	1	3	0	2	5
5— 10	1	2	0	0	16	15	9	13
10— 15	4	5	4	2	20	21	20	16
15— 20	7	2	6	4	22	31	28	19
20— 25	1	3	3	4	18	17	21	16
25— 30	3	8	6	2	11	26	17	11
30— 35	4	4	7	7	10	10	15	20
35— 40	2	4	5	1	6	7	10	11
40— 45	4	5	3	6	8	7	5	12
45— 50	3	0	0	1	8	5	1	5
50—100	8	8	9	0	15	15	15	7
100 and over	0	2	0	2	3	3	3	8
Total banks	37	43	43	30	140	157	146	143
Average	19.0	25.1	29.0	36.3	19.6	23.3	25.6	34.4
Median	33.1	32.1	31.2	29.9	22.4	23.4	23.1	27.8

$$\frac{Q26 + Q38 + Q39}{Q42 + Q43 + Q58 + Q59}$$

Table 42

Return Item Productivity

Items per Man-Hour	ADL Banks 1979	All Banks 1979
Under 5	1	3
5— 10	0	4
10— 15	0	5
15— 20	0	5
20— 25	1	12
25— 30	0	8
30— 35	1	13
35— 40	1	7
40— 45	1	11
45— 50	4	6
50—100	16	45
100 and over	5	26
Total banks	30	145
Average	78.1	84.8
Median	61.6	48.7

$$\frac{Q26}{Q58 + Q59}$$

Table 43

Exception and Return Item Productivity by Rate Discovered

Exception Item Rate per 100,000 Items Sent*	Number of Banks 1976	1977	1978	1979	Items Resolved per Man-Hour† 1976	1977	1978	1979
0— 500	6	17	15	7	7.2	12.7	20.3	41.2
500—1,000	75	88	77	62	17.1	21.0	19.2	30.0
1,000—1,500	34	32	29	39	19.9	27.4	28.6	30.5
1,500—2,000	17	12	16	18	26.3	21.5	34.0	45.1
2,000—2,500	5	5	5	9	29.3	50.7	59.8	52.6
2,500—3,000	1	2	2	3	49.3	55.2	37.2	38.5
3,000 and over	2	1	1	5	35.4	16.9	29.9	37.5
Total banks	140	157	145	143				
Average					19.6	23.3	25.7	34.4
Median					22.4	23.4	23.3	27.8

* $\dfrac{Q26 + Q38}{Q10} \times 100{,}000$

† $\dfrac{Q26 + Q38 + Q39}{Q42 + Q43 + Q58 + Q59}$

Table 44

Exception Item Productivity

Items per Man-Hour	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
0— 2	7	8	9	10	38	40	43	54
2— 3	5	9	4	4	23	40	24	21
3— 4	3	5	3	5	14	17	16	18
4— 5	6	4	12	4	14	12	18	10
5—10	7	8	11	5	25	24	30	26
10—15	1	6	1	0	8	16	6	7
15—20	2	0	0	0	4	3	3	1
Over 20	6	3	3	2	14	8	8	13
Total banks	37	43	43	30	140	160	148	150
Average	4.2	3.7	3.3	2.7	3.9	3.3	3.0	2.9
Median	4.7	3.9	4.4	3.2	3.6	3.0	3.4	3.0
							Q38 ÷ Q39	
							Q42 ÷ Q43	

Table 45

Reject Processing Productivity by Area

Area	ADL Banks 1978	1979	All Banks 1978	1979
Boston	631.4	471.8	606.2	586.1
New York	238.5	375.0	241.9	439.5
Philadelphia	428.1	*	383.7	408.8
Pittsburgh	705.1	507.9	705.1	527.6
Washington, D.C.	*	*	305.3	335.3
Atlanta	225.2	299.6	314.9	290.1
Chicago	414.5	1,100.0	398.9	881.4
Cleveland	492.2	*	533.2	880.3
Detroit	675.8	304.2	675.8	461.0
Minneapolis/St. Paul	*	*	*	*
St. Louis	*	*	441.0	500.7
Dallas	255.6	298.6	260.0	298.6
Houston	252.4	341.0	292.8	475.5
Los Angeles	1,002.8	305.5	240.9	824.3
San Francisco	200.1	211.9	225.0	350.1
Denver	695.9	*	695.9	399.1
Total banks	24	18	67	68
Average	267.9	282.0	296.9	308.6
Median	411.3	299.5	420.4	395.1
				Q81
				Q82

*No respondents.

Table 46

Reject Processing Productivity

Checks per Man-Hour	Number of Banks 1978	1979
Under 100	1	3
100—200	8	8
200—300	17	15
300—400	5	9
400—500	10	10
500—600	7	6
600—700	6	2
Over 700	13	15
Total banks	67	68
Average	296.9	308.6
Median	420.4	395.1
		Q81
		Q82

Labor Productivity Summary

The "average" bank responding to the 1979 survey used approximately 1.6 fewer man-hours for 10,000 items processed than in 1978. The average expenditure of man-hours in check processing per 10,000 items processed has been steadily declining during the survey years because of productivity increases and technological advances.

Average Man-Hour Expenditure per 10,000 Items*

Tasks	Man-Hours 1976	1977	1978	1979
Encoding	6.2	5.7	5.5	5.7
Balancing and corrections	4.9	4.4	4.1	3.5
Reader/sorter operations	0.8	0.8	0.8	0.8
Cash letter make-up and microfilming	1.8	1.6	1.5	1.4
Processing on-us items	8.1	6.6	5.8	5.3
Miscellaneous labor	1.4	1.3	1.5	1.2
Exception item resolution	1.5	1.4	1.3	1.0
Total man-hours†	24.7	21.8	20.5	18.9

*Total man-hours times the distribution of labor from Table 29.

†10,000 items divided by the average overall productivity from Table 27.

New Performance Measurement

Automated Encoding

A new section was added to the 1979 survey, which is designed to obtain data on the usage and productivity of automated encoding equipment. Currently limited to the IBM 3895, automated encoding promises to improve the productivity of the labor-intensive encoding section. Future surveys will examine the increase in usage of automated encoding equipment as well as its impact on the check collection system.

Since only a minimal number of banks are currently utilizing automated encoding, the tables are not broken down by individual area. Nationwide averages are instead utilized, and should be representative of automated encoding usage and productivity.

As indicated by Table 47, automated encoding equipment is currently processing 52.7% of the volume of encoded items in the responding banks. The remaining volume is primarily handled on single-pocket encoding machines (44.1%), with a small amount encoded on multipocket machines (3.1%).

Table 47

Percent of Automated Encoding

	Automated Encoding*	Single-Pocket Encoding†	Multipocket Encoding‡
Average	52.7%	44.1%	3.1%
Median	52.7%	44.1%	3.1%

$\frac{*Q74}{Q77} \times 100$; $\frac{\dagger Q75}{Q77} \times 100$; $\frac{\ddagger Q76}{Q77} \times 100$

Table 48

Automated Encoding Productivity

	All Banks
Average	716.5
Median	716.5
Q74/Q78	

Labor productivity of automated encoding equipment was 716.5 items per man-hour in the responding banks (Table 48). In contrast, average overall encoding labor productivity in the 1979 survey was 859.1 items per man-hour (Table 31).

Appendices

Appendix A

1979 Survey Questionnaire

1979
Check Collection Performance Measurement Survey

Bank Administration Institute

INSTRUCTIONS

1. Complete page 3 and the data collection questions for each day of the week, Monday through Saturday. Be sure to include the date in the space provided at the top of each column in Section I.

2. Complete page 14 and 15 at end of week.

3. Mail completed survey booklet to:

David M. Smith, *Principal Systems Specialist*
BANK ADMINISTRATION INSTITUTE
P. O. Box 500, Park Ridge, Illinois 60068
Telephone: 312/693-7300

4. Please read definitions before completing questionnaire.

BANK ADMINISTRATION INSTITUTE

Check Collection Performance Measurement

Date _____

Bank Name _____

Street Address _____

City _____

Name _____ Title _____
(of person to be contacted about survey data)

Phone _____

Number of DDA accounts in your bank _____

Number of DDA accounts in other banks for which you are doing the processing _____

Please describe any significant check processing problems you are experiencing. Consider the areas of transportation, personnel, equipment, interbank exchange procedures, accuracy, theft, fraud or security.

_____

_____

_____

_____

_____

_____

INCOMING WORK includes the check processing items received from the Federal Reserve, non-local banks, local banks and items included in all deposits made in your bank. Do *not* include the DDA items you process for other banks when you provide the accounting service on a fee basis. Do *not* include extra services performed over and above the check processing for lock box deposits, credit cards, preauthorized payments, account reconcilement or wire transfer.

I. INCOMING WORK

QUESTION	Question Relationship	Monday Date_____	Tuesday Date_____
1. Number of amount encoded items received from other banks and customers who do their own encoding sent to the reader/sorter.	____		
2. Number of amount encoded items received from other banks and customers who do their own encoding *not* sent to the reader/sorter.	____		
3. Number of items your bank encoded on single pocket machines sent to the reader/sorter.	____		
4. Number of items your bank encoded on single pocket machines *not* sent to the reader/sorter.	____		
5. Number of items your bank encoded on multi pocket machines sent to the reader/sorter.	____		
6. Number of items your bank encoded on multipocket machines *not* sent to the reader/sorter.	____		
7. Number of first pass items processed on the reader/sorter.	1+3+5=7		
8. Number of items that were *not* processed by the reader/sorter.	2+4+6=8		
9. Number of items received by your bank.	7+8=9		

DATA COLLECTION FORM

Please report all actual counts. Do *not* round off.

ITEMS consist of cashed and deposited checks, deposit tickets, control tickets, and other items which are normally processed commingled with checks on proof and/or encoding equipment. For batches use standard estimating techniques to determine item count.

Wednesday Date _____	**Thursday** Date _____	**Friday** Date _____	**Saturday** Date _____	**WEEKLY TOTAL**
				1.
				2.
				3.
				4.
				5.
				6.
				7.
				8.
				9.

Please report all actual counts; do *not* round off.

OUTGOING WORK is the disposition of all items you received and processed today.

TRANSIT ITEMS are the items you processed both high speed and low speed, that were "on-others."

II. OUTGOING WORK

QUESTION	Question Relationship	Monday	Tuesday
10. Total number of transit items (on others) sent.	____		
11. Total number of transit holdover (on others) items.	____		
12. Total number of on-us items paid and filed (from previous day's incoming work).	____		
13. Total number of on-us items heldover.	____		
14. Total number of payable thru drafts processed.	____		
15. Total number of items processed today.	10+11+12+ 13+14=15		
16. Total dollar value of items in No. 11.	____	$	$

III. REJECTS—(Number of rejects that occurred from question 7, Section I)

QUESTION	Question Relationship	Monday	Tuesday
17. Total number because of transit number field.	_____		
18. Total number because of account number field.	_____		
19. Total number because of dollar amount field.	_____		
20. Total number due to other reasons.	_____		
21. Total number of first pass MICR rejects.	17+18+19+ 20=21		

TRANSIT HOLDOVERS—Items received by your bank prior to a deadline but were not processed by high or low speed systems in time to be sent for collection at that deadline. These would result in a loss of float to the bank but not to its customer. Do not add today's holdover items to the next day's count.

ON-US ITEMS—those items drawn on your bank; includes all types of checking accounts, cashier checks, deposit tickets and control tickets.

ON-US ITEMS HELDOVER—items received by your bank that were not processed in time to be posted to your accounts on the day they were received.

Wednesday	Thursday	Friday	Saturday	WEEKLY TOTAL
				10.
				11.
				12.
				13.
				14.
				15.
$	$	$	$	$ 16.

REJECTS—are items rejected for any reason on the first pass through a MICR reader/sorter.

NOTE: Due to rounding, estimating, etc., the weekly totals for questions 9 and 15 may not balance, but they should approximate each other.

Wednesday	Thursday	Friday	Saturday	WEEKLY TOTAL
				17.
				18.
				19.
				20.
				21.

ITEMS MICROFILMED—total count of all check processing items filmed today.

IV. ITEMS MICROFILMED

QUESTION	Question Relationship	Monday	Tuesday
22. Total number of items filmed prior to reader/sorter processing.	____		
23. Total number of items filmed after reader/sorter processing.	____		
24. Total number of items filmed during reader/sorter processing.	____		
25. Total number of items microfilmed today.	22+23+24=25		

TRANSIT RETURN—items returned to your bank that you had originally sent out as "on others" items.

V. TRANSIT RETURNS

QUESTION	Question Relationship	Monday	Tuesday
26. Total number of return items today.	____		
27. Total dollar value of items in Question No. 26.	____	$	$

Please report all actual counts. Do *not* round off.

Wednesday	Thursday	Friday	Saturday	WEEKLY TOTAL
				22.
				23.
				24.
				25.

Wednesday	Thursday	Friday	Saturday	WEEKLY TOTAL
				26.
$	$	$	$	$ 27.

EXCEPTION ITEMS—are items or notification of items (such as debits, credits or inquiries) that may require reconcilement with other banks.

MISSENDS—items you missent or received from other banks that did not belong to you.

MISCODES (Encoding Errors)—dollar amount miscoded items you sent or received from other banks.

LISTING ERRORS (Incorrectly Charged)—items listed for an amount different from the written amount that you sent or received from other banks.

FREE—items received but not listed on incoming cash letters. (Enclosed not listed.)

LOST—items listed on the incoming cash letter but not received. (Listed not enclosed)

VI. EXCEPTION ITEMS

QUESTION	Monday		Tuesday		Wednesday	
	Discovered	Resolved	Discovered	Resolved	Discovered	Resolved
28./29. Missends						
30./31. Miscodes (Encoding Errors)						
32./33. Listing Error (Incorrectly Charged)						
34./35. Free						
36./37. Lost						
38./39. Total exception items today 28+30+32+34+36=38 29+31+33+35+37=39	**38.**	**39.**	**38.**	**39.**	**38.**	**39.**
40. Total dollar value of items in No. 38.	$		$		$	
41. Total dollar value of items in No. 39.	$		$		$	

Please report all actual counts. Do *not* round off.

Thursday		Friday		Saturday		WEEKLY TOTAL	
Discovered	Resolved	Discovered	Resolved	Discovered	Resolved	Discovered	Resolved
						28.	29.
						30.	31.
						32.	33.
						34.	35.
						36.	37.
38.	39.	38.	39.	38.	39.	38.	39.
$		$		$		$ 40.	
$		$		$		$ 41.	

LABOR MAN-HOURS—number of clerical and supervisory man-hours worked to complete each labor category listed. Separate estimated production from supervisory man-hours when appropriate for working supervisor. Include general force man-hours used in appropriate labor categories listed.

MAN-HOURS—productive time spent by department employees in completing the following tasks:

EXCEPTION ITEM MAN-HOURS—number of man-hours spent in discovering/resolving exception items for the calendar day.

ENCODING OPERATOR MAN-HOURS—number of man-hours spent encoding the items received by your bank that were not encoded.

READER/SORTER OPERATOR MAN-HOUR—number of man-hours spent processing first pass items on the reader/sorter.

MICROFILM OPERATOR MAN-HOURS—number of man-hours spent microfilming the check processing items.

VII. LABOR MAN-HOURS

QUESTION	Monday		Tuesday		Wednesday	
	Clerical	Supervisory	Clerical	Supervisory	Clerical	Supervisory
42./43. Total number of non-officer man-hours to process the exception items in Nos. 38 and 39.						
44./45. Total data control man-hours to process the items in No. 9.						
46./47. Total single pocket encoding operator man-hours to process the items in Nos. 3 and 4.						
48./49. Total multi-pocket encoding operator man-hours to process the items in Nos. 5 and 6.						
50./51. Total reader/sorter man-hours to process the items in No. 7.						
52./53. Total operator man-hours for cash letter makeup; Questions Nos. 10 and 11.						
54./55. Total microfilm operator man-hours to process the items in Nos. 22 and 23.						
56./57. Total paying and filing man-hours to process the items in Nos. 12, 13, and 14.						
58./59. Total man-hours to process return items in No. 26.						
60. All other non-officer man-hours used in check processing not reported in 42 to 59.	Hours / Description _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ **60.** Total _____		Hours / Description _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ **60.** Total _____		Hours / Description _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ **60.** Total _____	

DATA CONTROL MAN-HOURS—consists of making MICR corrections or substitutions, preparing other entries for high-speed processing, controlling the movement of batches of items into and out of high-speed processing areas, and balancing the transit and DDA entry runs, and the preparing of daily settlement figures for departments involved in processing checks.

RETURN ITEM MAN-HOURS—number of man-hours spent in processing items returned to your bank that you had originally sent out as on-others items.

PAYING AND FILING MAN-HOURS—consists of processing "on-us" items including the capture of MICR data, preparation of daily transaction files, updating of customer master files, sorting of paper documents, statement printing, management reports, verification of signature, date holds, stop payment, etc., check filing and statement rendering.

CASH LETTER MAKEUP MAN-HOURS—consists of processing outgoing ("on-others") items on computer and/or reader/sorter equipment, including the printing of cash letters, the fine sorting of items by destination, and the assembly and dispatch of these items including any manual processing of quick kills and reader/sorter rejects.

Thursday		Friday		Saturday		WEEKLY TOTAL	
Clerical	Supervisory	Clerical	Supervisory	Clerical	Supervisory	Clerical	Supervisory
						42.	43.
						44.	45.
						46.	47.
						48.	49.
						50.	51.
						52.	53.
						54.	55.
						56.	57.
						58.	59.
Hours Description		Hours Description		Hours Description			
60. Total		60. Total		60. Total		60. Total	
		61. Total of questions 42 to 60				61.	

PLEASE COMPLETE THE FOLLOWING AT THE END OF THE WEEK:

Total of Debit and Credit Outstanding Transit Exception Items	Part of Total Exception Items (Debit and Credit) That Have Been Outstanding for				
	1 Month or Less	1-2 Months	2-4 Months	4-6 Months	Over 6 Months
62. $____ Amount	**63.** $____ Amount	**64.** $____ Amount	**65.** $____ Amount	**66.** $____ Amount	**67.** $____ Amount
68. ____ Items	**69.** ____ Items	**70.** ____ Items	**71.** ____ Items	**72.** ____ Items	**73.** ____ Items

NOTE: 62=63+64+65+66+67
68=69+70+71+72+73

Generally, our bank would: (check one)

- ☐ Always balance before items leave the bank, even if it means missing a transit deadline.
- ☐ Attempt to balance before the items leave the bank, but will make a transit deadline even if balancing is incomplete.
- ☐ Very seldom balance before the items leave the bank to make transit deadline.

Our bank's experience over the last year indicates that Exception Items have:

		Why
Grown	☐	_____
Remained about the same	☐	_____
Decreased	☐	_____

The staff responsible for making adjustments and reconciliations over the last year has

*Number of People**		*1978*	*1979*
Grown	☐		
Remained about the same	☐		
Decreased	☐		

**Number of full time equivalent people.*
Express part time people as fractional of full time people.

SPECIAL PROCESSING QUESTIONNAIRE

Note: The following two sections should be completed if your bank utilizes IBM 3895/6 encoding equipment and/or uses automated reject processing equipment.

AUTOMATED ENCODING

QUESTION	Question Relationship	Weekly Total
74. Total number of items encoded on IBM 3895/6	_____	**74.**
75. Total number of items encoded on other single pocket encoders	_____	**75.**
76. Total number of items encoded on other multi pocket encoders	_____	**76.**
77. Total number of items encoded	74+75+76=77	**77.**
78. Total man-hours used to process items in No. 74	_____	**78.**

AUTOMATED REJECT PROCESSING

AUTOMATED REJECT PROCESSING—Processing of all nonmachinable items, including items rejected by the MICR reader/sorter, on *both first pass and subsequent passes*, using automated equipment from vendors, e.g., BancTec, Burroughs, Cummins-Allison, Lundy, NCR.

AUTOMATED REJECT PROCESSING MAN-HOURS—consists of preparing reject items for processing, (including attaching strips) processing items, and balancing output.

Is your bank using automated processing?

☐ No ☐ Yes, exclusively ☐ Yes, in combination with manual methods

If not, does your bank plan to acquire automated reject processing capability?

☐ No ☐ Yes ☐ Undecided

If your bank uses automated reject processing, is it

☐ On-line ☐ Off-line?

If your bank uses automated reject processing, do you repair all fields, including account number?

☐ No ☐ Yes ☐ Yes, on selected banks ☐ Yes, but only if operator intervention is not required

QUESTION	Question Relationship	Weekly Total
79. Total number of all rejects processed through automated reject systems.	_____	**79.**
80. Total number of all rejects processed through manual reject systems.	_____	**80.**
81. Total number of MICR rejects processed.	79+80=81	**81.**
82. Total man-hours used to process reject items in No. 81.	_____	**82.**

Problems/comments: _____

_____

_____

_____

Please report all actual counts; do not round off.

ACH TRANSACTIONS— Any Electronic Funds Transfer transactions processed through a local or regional Automated Clearinghouse, including any items you have processed for your own customers.

RETURNED ACH TRANSACTIONS:

Sent— Any ACH transaction which you returned to the originator because you were unable to post to an account or for which no prenotification was on file.

Received— Any ACH transaction which you originated, but was returned to you by the ACH or the intended receiver.

I. ACH TRANSACTIONS

QUESTION	Question Relationship	MONDAY		TUESDAY	
		Sent	Received	Sent	
1./2. Debits	———				
3./4. Credits	———				
5./6. Total ACH Transactions	1+3=5 2+4=6				

II. RETURNED ACH TRANSACTIONS

QUESTION	Question Relationship	MONDAY		TUESDAY	
		Sent	Received	Sent	
7./8. Debits Returned	———				
9./10. Credits Returned	———				
11./12. Total Returned ACH Transactions	7+9=11 8+10=12				

III. ACH DEBIT TRANSACTIONS

QUESTION	Question Relationship	MONDAY		TUESDAY	
		Sent	Received	Sent	
13./14. Insurance Premium	———				
15./16. Home Mortgage	———				
17./18. Telephone Bill Payment	———				
19./20. Corporate Payment—Replacement for Depository Transfer	———				
21./22. Other Payments	———				
23./24. Total ACH Debit Transactions	13+15+17+19+21=23 14+16+18+20+22=24				

ACH DEBIT TRANSACTIONS:

Insurance Premium, Home Mortgage—Any ACH transaction sent or received by you for the payment of a consumer obligation.

Telephone Bill Payment—Any ACH transaction sent or received by you as a result of a telephone bill payment program at a financial institution.

Corporate Payment—Any ACH transaction sent or received by you that was originated by a corporation for the account of a corporation.

	WEDNESDAY		THURSDAY		FRIDAY		SATURDAY-SUNDAY		WEEKLY TOTAL	
Rec'd	Sent	Received	Sent	Received	Sent	Received	Sent	Received	Sent	Received
									1.	2.
									3.	4.
									5.	6.

	WEDNESDAY		THURSDAY		FRIDAY		SATURDAY-SUNDAY		WEEKLY TOTAL	
Rec'd	Sent	Received	Sent	Received	Sent	Received	Sent	Received	Sent	Received
									7.	8.
									9.	10.
									11.	12.

	WEDNESDAY		THURSDAY		FRIDAY		SATURDAY-SUNDAY		WEEKLY TOTAL	
Rec'd	Sent	Received	Sent	Received	Sent	Received	Sent	Received	Sent	Received
									13.	14.
									15.	16.
									17.	18.
									19.	20.
									21.	22.
									23.	24.

Please report actual counts; do not round off.

ATM TRANSACTIONS— Any transactions initiated at an Automated Teller Machine by the customer.

IV. ATM TRANSACTIONS

QUESTION	Question Relationship	MONDAY	TUESDAY
25. Total number of cash withdrawals from checking.	_____		
26. Total number of cash withdrawals from savings.	_____		
27. Total number of cash withdrawals from credit card.	_____		
28. Total number of balance inquiries.	_____		
29. Total number of transfers between checking, savings, and credit card accounts.	_____		
30. Total number of checking deposits received.	_____		
31. Total number of savings deposits received.	_____		
32. Total number of other ATM transactions.	_____		
33. Total ATM transactions.	25+26+27+28+29+ 30+31+32=33		
34. Total dollar value of items in No. 25.	_____	$	$
35. Total dollar value of items in No. 26.	_____	$	$
36. Total dollar value of items in No. 27.	_____	$	$
37. Total dollar value of items in No. 30.	_____	$	$
38. Total dollar value of items in No. 31.	_____	$	$

Please complete the following questions:

	Main Office
How many Automated Teller Machines do you presently have in service?	**39.**
How many Automated Teller Machines do you plan to install in the next 12 months?	**43.**
What was the total volume of ATM transactions for all machines installed at each location during the survey week, excluding balance inquiries.	**47.**

Are your Automated Teller Machines currently ☐ On-Line or ☐ Off-line? *(Please check one)*

	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY/SUNDAY	WEEKLY TOTAL
					25.
					26.
					27.
					28.
					29.
					30.
					31.
					32.
					33.
	$	$	$	$	34. $
	$	$	$	$	35. $
	$	$	$	$	36. $
	$	$	$	$	37. $
	$	$	$	$	38. $

	Branch Offices	Off-premise Units	Total ATM Units
	40.	41.	42.
	44.	45.	46.
	48.	49.	50.

NOTE: 42=39+40+41
46=43+44+45
50=47+48+49=33-28

Appendix B

Check Flow Patterns

Table 49

The Percent of Automated Reject Processing by Area

Area	Automated Reject Processing 1978	Automated Reject Processing 1979	Manual Reject Processing 1978	Manual Reject Processing 1979
Boston	70.8	82.8	29.2	17.2
New York	51.5	60.9	48.5	39.1
Philadelphia	53.0	64.5	47.0	35.5
Pittsburgh	97.0	91.7	3.0	8.3
Washington, D.C.	44.6	82.9	55.4	17.1
Atlanta	80.7	63.0	19.3	37.0
Chicago	53.4	59.1	46.6	40.9
Cleveland	72.9	38.7	27.1	61.3
Detroit	*	90.1	*	9.9
Minneapolis/St. Paul	*	*	*	*
St. Louis	48.7	69.9	51.3	30.1
Dallas	76.7	88.2	23.3	11.8
Houston	84.5	23.6	15.5	76.4
Los Angeles	51.9	84.9	48.1	15.1
San Francisco	76.0	69.0	24.0	31.0
Denver	*	53.9	*	46.1
Total banks	70	65	70	65
Average	66.0	66.3	33.9	33.7
Median	75.0	73.8	24.0	26.2

*No respondents.

$\frac{Q79}{Q81} \times 100$ $\frac{Q80}{Q81} \times 100$

Table 50

The Distribution of the Automated Reject Processing Rate

Rate	Number of Banks 1978	Number of Banks 1979
0% — 10%	6	6
10% — 20%	1	3
20% — 30%	9	0
30% — 40%	3	3
40% — 50%	3	2
50% — 60%	4	7
60% — 70%	4	5
70% — 80%	11	11
80% — 90%	10	11
90% — 100%	5	6
100%	14	10
Total banks	70	65
Average	66.0	66.3
Median	75.0	73.8

$\frac{Q79}{Q81} \times 100$

Table 51

The Percent of Incoming Items Encoded

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	66.5%	61.7%	67.2%	73.5%	60.1%	56.5%	64.1%	48.1%
New York	55.1	54.5	49.0	55.8	52.6	51.0	48.9	48.2
Philadelphia	77.4	66.8	69.6	50.8	57.0	56.0	56.9	41.5
Pittsburgh	55.9	56.5	60.0	52.5	53.3	54.9	55.0	48.7
Washington, D.C.	*	*	48.6	43.5	52.8	49.2	50.6	43.9
Atlanta	58.0	62.9	66.4	67.8	53.0	52.2	58.2	54.5
Chicago	74.7	70.0	80.2	83.9	72.5	67.8	77.2	70.2
Cleveland	58.0	61.5	58.2	62.9	54.1	52.1	51.7	52.9
Detroit	57.9	52.7	57.6	60.0	50.7	44.3	51.3	40.1
Minneapolis/St. Paul	66.1	67.7	*	*	66.1	67.7	*	*
St. Louis	63.1	65.0	68.6	68.4	61.7	65.5	66.7	66.5
Dallas	74.0	80.3	80.0	82.4	71.7	75.5	76.3	71.1
Houston	*	80.0	85.5	86.8	56.3	70.8	65.9	62.3
Los Angeles	41.2	50.3	50.1	43.6	41.9	45.9	42.3	33.8
San Francisco	41.3	39.6	36.9	38.7	44.5	39.0	38.5	40.2
Denver	73.7	77.8	77.8	77.9	64.8	67.2	68.4	67.3
Total banks	37	44	43	30	141	166	154	152
Average	56.6	57.3	57.4	56.8	54.4	53.3	53.9	50.7

*No respondents.

$$\frac{Q1 + Q2}{Q9} \times 100$$

Table 52

The Percent of On-Us Items

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	34.2%	32.6%	33.4%	22.8%	41.1%	39.7%	37.5%	50.4%
New York	46.8	38.5	50.3	38.2	50.4	44.0	49.9	49.0
Philadelphia	19.3	26.4	24.4	53.2	42.5	36.9	38.8	51.3
Pittsburgh	40.8	46.1	49.5	50.0	46.6	48.1	53.6	60.8
Washington, D.C.	*	*	37.7	33.5	46.4	44.1	43.8	41.0
Atlanta	33.4	37.5	32.1	26.0	44.0	44.4	40.4	43.9
Chicago	25.0	27.3	27.2	25.7	26.7	28.4	27.9	28.9
Cleveland	42.4	39.6	41.0	43.2	45.1	42.0	44.1	43.4
Detroit	52.2	46.3	48.0	48.7	50.5	47.1	49.2	52.0
Minneapolis/St. Paul	36.9	31.7	*	*	36.9	31.7	*	*
St. Louis	18.9	19.2	18.0	14.2	25.2	23.9	25.2	22.5
Dallas	20.7	18.3	15.1	17.6	24.6	22.7	18.9	40.0
Houston	*	16.7	14.4	15.8	31.3	21.1	28.9	27.7
Los Angeles	40.6	46.7	44.5	31.2	56.4	56.5	55.6	57.6
San Francisco	55.6	59.2	61.0	61.2	55.6	57.9	60.3	48.4
Denver	41.9	42.5	39.2	28.3	42.6	42.6	41.4	36.1
Total banks	37	44	43	30	140	168	149	153
Average	42.4	40.7	42.5	33.8	45.2	43.3	44.8	44.5

*No respondents.

$$\frac{Q12 + Q13 + Q14}{Q15} \times 100$$

Table 53

The Percent of Payable-Thru Drafts

Area	ADL Banks 1976	1977	1978	1979	All Banks 1976	1977	1978	1979
Boston	7.4%	9.3%	9.3%	4.1%	8.6%	12.9%	17.3%	9.6%
New York	9.3	1.5	5.5	23.1	6.2	1.6	4.2	8.4
Philadelphia	4.3	3.2	2.9	1.6	1.9	2.0	2.7	1.6
Pittsburgh	0.6	0.5	0.6	0.4	0.5	0.4	0.4	0.2
Washington, D.C.	*	*	11.3	12.1	3.2	3.2	5.6	2.8
Atlanta	3.6	3.1	2.3	2.1	1.2	1.5	1.4	1.4
Chicago	11.4	12.6	12.8	9.8	9.2	8.3	10.4	5.8
Cleveland	0.7	1.8	1.3	1.3	1.7	2.6	1.4	2.1
Detroit	0.8	0.7	0.6	0.6	1.7	1.0	0.5	8.1
Minneapolis/St. Paul	8.3	8.2	*	*	8.3	8.2	*	*
St. Louis	8.7	9.5	9.9	6.5	4.3	5.2	4.3	6.3
Dallas	7.1	12.8	7.7	5.1	4.2	7.3	5.1	2.6
Houston	*	1.6	1.2	1.1	3.4	1.8	1.1	1.6
Los Angeles	9.3	4.2	6.8	1.3	2.0	2.2	3.0	0.9
San Francisco	0.9	0.7	0.4	1.0	0.9	0.8	0.6	19.0
Denver	55.0	52.3	58.7	6.7	40.4	34.5	35.3	7.6
Total banks	37	44	43	30	141	168	150	153
Average	5.8	4.6	5.3	3.3	3.9	3.4	4.0	3.8

*No respondents.

$$\frac{Q14}{Q12 + Q13 + Q14} \times 100$$

Table 54

The Percent of Supervisory to Clerical Man-Hours

Task	Average Supervisory Time 1976	1977	1978	1979
Processing of exception items (Q43 ÷ Q42) × 100	13.6%	13.4%	13.0%	12.4%
Data control (Q45 ÷ Q44) × 100	13.7%	13.7%	12.9%	16.7%
Encoding (Q47 + Q49) ÷ (Q46 + Q48) × 100	10.5%	10.3%	11.8%	6.3%
Reader/Sorter (Q51 ÷ Q50) × 100	18.1%	17.6%	20.1%	16.8%
Cash letter make-up (Q53 ÷ Q52) × 100	14.6%	13.0%	14.1%	13.0%
Microfilm (Q55 ÷ Q54) × 100	7.3%	7.0%	8.1%	10.0%
Paying and filing (Q57 ÷ Q56) × 100	7.6%	8.0%	9.8%	4.9%
Return items (Q59 ÷ Q58) × 100	10.2%	9.8%	12.8%	23.5%
Total banks	140	146	134	151
Combined average	10.8%	10.8%	12.1%	9.4%

$$\frac{Q43 + Q45 + Q47 + Q49 + Q51 + Q53 + Q55 + Q57 + Q59}{Q42 + Q44 + Q46 + Q48 + Q50 + Q52 + Q54 + Q56 + Q58} \times 100$$

Appendix C

Problems Reported by Bankers

The following comments on check collection and processing operations were submitted by bankers who participated in the 1979 BAI survey.

Resolving Discrepancies and Adjustments

"We have found an increase in exception items with the Fed. Exceptions posted to our account, with no advices received to research the items, create a backlog and items in suspense. It would appear the whole adjustment function is deteriorating."

"We are experiencing an alarming increase in lost cash letters reported through the Federal Reserve check collection system."

"The cost of labor makes it cost ineffective to handle check adjustments for lower dollar amounts. Some banks find this level as high as $100. Under that level, it is difficult to receive information back. Perhaps, the banking industry and the Federal Reserve System can develop a short form for processing that could list multiple small dollar adjustments. Also, handling photocopies between banks is difficult, because many do not or will not research whether or not an item has been paid."

"Photocopies of items that piggybacked or were lost within the processing bank should not be handled as a cash item. They should be presented without entry to the drawee bank so it can research and ascertain that the original check was not paid."

"A primary problem continues to be exception item processing involving research and adjustments between other banks in the check processing system and ourselves. Outgoing items, which are reported as missing, turn out not to be missing in about half the cases."

"Three return problems are apparent: an increased number of late return challenges; extra tracing due to illegible and overlapping endorsements; and increased exception handling of due from returns as the network is expanded."

"We are continuing to have problems with adjustments involving U.S. Government Treasury cards which require up to six months to clear regardless of the amount of the exception. When the entry is received, "as of" credit is not given, thereby creating large earnings losses due to lost availability."

"When checks are reported as missing, the photocopy collection procedure is long and tedious. The drawee either fails to respond or provides incomplete and inaccurate information."

"We have been experiencing an over all decline in the service level provided by the Federal Reserve System. These service problems have included: poor availability schedules due to system transportation problems; receiving proper credit for letters going to other districts; and a large increase in adjustments incoming from Fed."

"Special payable throughs are a continuing problem. Fed adjustments have increased, especially in terms of lost items. The original item often turns up as paid and we are unable to find out how. Money center banks do not respond to correspondence."

Personnel — Training and Turnover

"Because of the need for highly skilled personnel, turnover is a significant problem, due to the training time involved with new personnel."

"Turnover in the check processing area continues to be well above the bank norm, principally coming from night shifts, both in clerical and supervisory ranks. Volume fluctuations in highly repetitive job tasks tend to create mundane duties which demand high accuracy and speed in the production area. Although staff may be well qualified and trained, many individuals are unable to adjust psychologically to fluctuating pressures and attention to required detail."

"We encounter difficulty in securing trainable replacements for open positions."

"Being located in a downtown area creates transportation problems and increased expenses."

"1979 has been a year of excessive turnover. The check processing and adjustment areas have had more than a 150% turnover."

"Personnel turnover continues to be our most significant problem."

Transportation and Mail

"Transportation of cash letters is becoming more difficult and expensive. Courier reliability is low."

"Employees of commercial courier companies exhibit little concern or desire to meet their schedules on incoming work. Late arrivals hold up the process and often impact outgoing deadlines adversely. Destruction of packages and receiving individual cash letters and parts of cash letters in the U.S. mail are constant problems. Parties with no relation to the banking industry contact us periodically, having received all or parts of cash letters from the postal system which we have previously dispatched to other banks for collection."

"Transportation costs have risen dramatically, especially air charters, due to the combined increases in wages and fuel. Current interest rates support most increases, however, future softening of interest rates will cause a serious re-evaluation of many check clearing programs."

"The 75% rule being applied by the Federal Reserve has caused an undue amount of pressure on us as a correspondent institution. We have experienced extreme difficulty in getting couriers to return evidence of delivery of our direct sends. Being able to prove timely delivery to the Federal Reserve is a major problem."

"High cost of fuel resulting in airline cutbacks is affecting float."

"Deregulation of airlines has had a negative impact on transportation. Transportation misses are climbing steadily as airlines increasingly cancel or change flights without notice."

"Float considerations due to high interest rates are creating new and expanded sendings, which in previous years were considered unfeasible or impractical."

"Transportation of cash letters is our biggest problem. Branch banking, state wide, creates a problem in getting the items into a central point for disbursing to large money centers. Fewer and fewer flights late at night are made by airlines to the centers."

Reject Rates and Reject Handling

"Rejects are still a problem. We are looking into various reject re-entry vendors, but in the meantime quality control procedures are used to minimize rejects."

"Rejects have not decreased due to a lack of quality control on the part of printers when changing from eight to nine digits in the transit routing field."

"A major problem is occurring with insurance companies drafting on our customers accounts using the wrong format and wrong account numbers."

"We are experiencing an increasing number of poor quality MICR checks being printed by check printers. The increased usage of reject repair systems, and the number of rejects created as a result of the account number not being printed has continued to climb. Requiring full field MICR encoding of all rejects would eliminate this problem."

"We have recently created a quality control department within operations in an effort to control and reduce exception handling costs. The MICR testing service offered to our customers will assist in alleviating the high costs of reject rehandling. As other financial

institutions institute similar programs, the banking industry will begin to realize cleaner check processing performance."

"We are experiencing a high number of rejects which can be attributed to carrier envelopes. Envelopes are only encoded with routing transit numbers and dollar amounts, but not the account number."

Equipment and System Problems

"Continued sorter and computer problems are causing high float losses."

"We are experiencing a problem with the field engineering maintenance of equipment not being satisfactory."

Fraud

"Employee turnover increases difficulty in maintaining high standards of performance and could increase exposure to fraud, e.g., forged signatures, and so on."

"The opportunity for defaulcation is becoming a major concern due the the increasing velocity of deposited dollars and a general deterioration of the paper handling mechanism. Adding to this premise is the quality of employees available in the market place. Such employees have totally different sets of values and standards with regard to work attitudes, accountability, and performance compared to bank personnel of a decade ago."

Miscellaneous Comments

"The new Fed policy of increased adherence to direct send deadlines has resulted in bank action to direct send more items to correspondents or to use Fed fine sort options. Such alternative sendings, although they increased costs, have been preferable to incurring uncollected funds."

"We are experiencing a problem with Saturday closing at the Federal Reserve Banks."

"Banks should standardize deposit procedures to ensure accuracy and efficient processing."